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water resource management plan
environmental assessment

june 1984

SANTA MONICA MOUNTAINS

NATIONAL RECREATION AREA / CALIFORNIA

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WATER RESOURCE MANAGEMENT PLAN

AND ENVIRONMENTAL ASSESSMENT

NATIONAL PARK SERVICE
DIVISION OF RESOURCE MANAGEMENT
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA

United States Department of the Interior, National Park Service,
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introduction

INTRODUCTION

The Santa Monica Mountains form the western backdrop for the Los Angeles metropolitan area. The mountains and adjacent coastline constitute an expanse of natural landscape whose scenic, natural, and cultural values are amplified because of the area's location. The contrast between the intensively developed, expanding urban complex of the city and the undeveloped open spaces of the Santa Monica Mountains is one of the area's most significant aspects. In addition, there is a severe deficit of recreational open space to serve the population in the Los Angeles/Ventura County region, which numbers over 10.5 million residents. The Santa Monica Mountains can potentially service part of the demand for recreational opportunities in the area, while preserving a significant representation of a Mediterranean type ecosystem.

National Park Service areas were first established in or near large cities in the early 1970's to provide additional outdoor recreation opportunities for urban residents and to preserve the best remaining significant landscapes in metropolitan areas. Recognizing the natural, cultural, and recreational values of the Santa Monica Mountains, Congress established the Santa Monica Mountains National Recreation Area in 1978. The enabling legislation (P.L. 95-625) instructed the Department of the Interior to "manage the recreation area in a manner which will preserve and enhance its scenic, natural, and historic setting and its public health value as an airshed for the southern California metropolitan area while providing for the recreational and educational need of the visiting public". The national recreation area boundary encompasses approximately 150,000 acres in the mountains and along the coast. A larger area, the Santa Monica Mountains Zone, has also been designated in state and Federal legislation. This zone, which includes the entire physiographic province of the Santa Monica Mountains incorporates approximately 225,000 acres.

The National Park Service (NPS) assumed management of Santa Monica Mountains National Recreation Area in 1979. The NPS, in cooperation with other federal, state, local and private agencies and groups has identified strategies for the management, preservation, and use of lands within the boundary. The issues and objectives for the national recreation area are identified by the National Park Service in the General Management Plan (NPS, U.S. Dept. of the Interior, 1982). This document addresses the recommended management strategies for the park, the alternatives considered for the proposed action, and the general implications, or impacts, of these proposed actions.

Because the Santa Monica Mountains National Recreation Area is a relatively new unit of the National Park System, the land base is evolving. While the projected degree of Federal interest is generally defined in the Land Protection Plan (NPS, U.S. Dept.

of the Interior, 1984), most of the lands necessary to implement that plan have not been acquired. Therefore, only broad strategies that set a general direction for management and use are presented in this document.

The natural resource issues of the Santa Monica Mountains are addressed in the Natural Resource Management Plan (NRMP) (NPS, U.S. Department of the Interior, 1982). The NRMP "defined the course of action, based on Service (NPS)policy and law, for the continuous protection, management, and maintenance to perpetuate the resources, to achieve park purpose and objectives, and to appropriately regulate the effect of park use on these resources (NPS, Management Policies, 1978). The resource management plan serves as the reference document for the park's Water Resource Management Plan.

The purpose of the Water Resource Management Plan is to provide a critical and detailed examination of water resources and water related issues in the Santa Monica Mountains. This plan "defines a course of action based upon law and National Park Service policy for the protection, conservation, use and management of park water resources. It also is a repository for information about water resources" (NPS, U.S. Dept. of the Interior, 1979).

objectives

RESOURCE MANAGEMENT OBJECTIVES

The Santa Monica Mountains National Recreation Area is a non-traditional National Park Service area. Rather than outright NPS ownership of the 150,000 acres of land within the park's boundary, Congress mandated (P.L. 95-625) a cooperative approach (in some respects) through the participation of other state/local agencies and private landowners for effective park management. One of the primary responsibilities of the National Park Service is the coordination and implementation of resource management activities throughout the entire NRA. This leading role in executing resource management programs within the Santa Monica Mountains is based on:

1. Direct management actions on lands purchased in fee;

2. Deed and covenant monitoring and professional advice on Service acquired conservation easements;

3. Cooperative and advisory activities on lands within the recreation area owned by others.

The Resource Management Objectives for the National Recreation Area, as interpreted from the enabling legislation and the Management Policies for the National Park Service (1978) include:

-Protect, preserve, and maintain natural processes and cultural values.

-Monitor natural systems to evaluate trends in ecosystem dynamics and impacts.

-Restore and maintain natural terrestrial, acquatic, coastal, and atmospheric ecosystems that have been impaired by the activities of man and his technology.

-Conduct research to gather and analyze information necessary to manage, restore, and maintain natural processes and cultural values.

-Protect threatened or endangered plant and animal species and habitats critical to the maintenance of their populations, and reintroduce those species presently eliminated where possible.

-Protect and manage designated areas of exceptional resource value.

-Restore land surfaces disturbed by human activities to more natural appearances, recognizing that cultural remains must be preserved.

-Limit unnatural sources of air, water, noise, and visual pollution to the greatest possible degree.

-Monitor encroachments by exotic flora and fauna into natural ecosystems and execute programs for their removal where feasible.

-Encourage and participate in the preservation of the cultural history of the Santa Monica Mountains.

-Pursue cooperative cultural resource stewardship programs and projects throughout the recreation area.

-Develop, promote, and participate in cooperative resource management programs with local, state, and other Federal agencies and private landowners to achieve the resource policies enumerated in Public Law 95-625.

To effectively manage and monitor the natural resources of the Santa Monica Mountains, resource management activities will be based on watershed and biogeographical concepts. This will enable preservation of ecosystem integrity throughout the mountains. The non-developed watersheds will provide critical baseline information as to the natural ecosystem and watershed functions. In the developed areas, monitoring programs will detect the degree of impact from which mitigation can be formulated. Finally, in areas where development is proposed, data from undeveloped and developed areas will enable sound decisions to be made regarding the course of action to be pursued for resource protection while allowing compatible land uses to co-exist within the national recreation area. Cooperative resource management activities between NPS, other agencies, landowners, and homeowners will attempt to manage the relationships between human activities and environmental dynamics.

NATURAL RESOURCE BASE:

The Santa Monica Mountains represent one of the largest Mediterranean ecosystems which is being preserved throughout the world. These ecosystems occur in the midlatitudes and are situated in limited coastal areas of the United States, the Mediterranean Sea vicinity, Central Chile, Australia, and South Africa. These areas are characterized by mild/wet winters and dry/hot summers. The Santa Monica Mountains, as a unit of the National Park System, contain portions of the nation's cultural and natural heritage that have remained largely under-represented in any other Department of the Interior lands. More than 20 of the major themes identified in the 1972 "National Park System Plan" are contained in this one area alone (Statement of National Significance, 1983).

A complete natural resource description of the Santa Monica Mountains is contained in the park's Natural Resource Management Plan (1982). A synopsis of these important natural resource characteristics includes:

1. VEGETATION COMMUNITIES: Mediterranean-type ecosystem. Currently 944 plant species have been identified in the national recreation area: four species are proposed for Federal listing and one is listed as endangered. There are seven vegetation communities that have been identified in the Santa Monica Mountains including:

A. Coastal (Salt Marsh): Areas of high biotic productivity. Provides habitat for numerous wildlife species. Only 8,500 acres of coastal wetlands remain in southern California (out of an original 26,000 acres). Of the remaining coastal wetland areas, 1,410 acres (17 percent) are situated in the national recreation area.

B. Coastal Sage Scrub: Important plant community for slope stabilization and erosion control.

C. Chaparral: Most extensive vegetation community in the Santa Monica Mountains. Older age structures in this community contain a high percentage of dead material. Fire is the major decomposing agent of chaparral.

D. Southern Oak Woodland: Situated as "islands" in chaparral areas with deep, moist soils, usually in canyon bottoms and on north facing slopes.

E. Valley Oak Savanna: Prefer flat alluvial valley bottoms in grassland areas and are important wildlife habitat.

F. Valley Grassland: Both annual and perennial species are present in this community.

G. Riparian: Greatest species diversity of all plant communities. Both flora and fauna abound due to the availability of perennial water and the high content of soil nutrients. Essential for wildlife habitat. It is a fragile community which has been significantly reduced in extent. Less than ten percent of the original 200,000 acres of riparian habitat remain in the state (California Riparian Ecosystem Conference, 1981).

2. CRITICAL HABITATS: The Nature Conservancy, in cooperation with the California Department of Fish and Game and the California Native Plant Society developed the California Natural Diversity Data Base for "Special Plant Communities of California". Ten of these communities for special consideration are found in the Santa Monica Mountains which includes; mainland giant coreopsis scrub, native grassland, rare plant enclaves, southern coastal chaparral and sage scrub, southern coastal salt marsh, disjunct communities, freshwater marsh, southern California walnut communities, sycamore woodlands, and valley oak savanna.

3. LOS ANGELES COUNTY SIGNIFICANT ECOLOGICAL AREAS (SEA's): Fourteen of the sixty two SEA's in Los Angeles County are found

in the Santa Monica Mountains (England and Nelson, 1976). These areas were re-surveyed in 1981 and the findings from this study re-emphasized the identification and significance of these watersheds. In addition, five areas of special concern are located in Ventura County.

4. WILDLIFE: Over 60 species have been identified in the Santa Monica Mountains including herbivores, predators, migratory birds, amphibians, reptiles, steelhead trout, rare and endangered birds at Point Mugu including the Snowy Plover, Clapper Rail, California Black Rail, Least Tern, and Brown Pelican (Resource Management Plan, 1982). Of interest, the population includes mountain lions, bobcats, grey foxes, and thirteen species of raptors (birds of prey) including the peregrine falcon and golden eagle.

5. COASTAL: The NRA includes 46 miles of coastal zone including upland habitats, coastal bluffs, sand dunes, wetlands, open coast sandy and rocky beaches, and a barrier reef. Included in this area is a 27 mile zone which has been designated an "Area of Special Biological Significance" by the California State Water Resource Control Board.

6. WATER: Required for ecosystem stability and maintenance. Only natural source is precipitation. Most streams are intermittent and several are perennial. Is considered one of the primary indicators for the health of the ecosystem due to it's ability to reflect impacts in a short time frame. In addition, springs within the mountains provide an important source of continuous water supplies to wildlife and vegetation comunities.

RESOURCE IMPACTS:

The Santa Monica Mountains National Recreation Area is one of the most impacted parks in the National Park System. In the 1980 State of the Parks Report presented to Congress by the NPS, the Santa Monica Mountains was the 5th most impacted unit within the System. There were a total of 53 sources of impact to the natural and cultural resources listed by this document.

Of paramount concern is the accelerating rate of urban encroachment within the mountains. Ideally situated, the Santa Monica Mountains have become an attractive site for residential and commercial development. The overall result upon the water resources includes:

1. WATER QUALITY DEGRADATION. Urban runoff from housing tracts (including landscaping) and roadways has altered the constituents in the streams and in the ground water supplies. The USGS discussed these impacts on water quality parameters from urban runoff in a study conducted in the Tecolote Creek Drainage Area, San Diego County, California (Setmire and Bradford, 1980). This study detailed increases in this basin for the parameters analyzed (including increases in toxic

elements). It can be deducted that similar trends in water quality degradation are occurring in the Santa Monica Mountains, the extent of which is unknown.

2. WATER QUANTITY (STREAM FLOW) INCREASES. Removal of vegetation and replacement with cement or asphalt decreases percolation of surface waters into the ground. Hence, surface waters are directly input into storm drains or stream channels thereby increasing peak flows, stream flow (discharge) rates, and flooding potential which threatens natural resources, property, and life.

3. RAW SEWAGE. The steepness of the slopes in the Santa Monica Mountains, combined with some soils which are unable to support adequate septic systems, have resulted in raw sewage input into the surface waters within the national recreation area. One local newspaper estimated that over 40 percent of all septic systems in the Malibu area are currently failing. This presents a health problem to those who recreate in the Santa Monica's and it definitely has an impact on the resource base including offshore shell fish which could make them unfit for consumption. At times in the past public beaches have been closed to recreation due to the extremely high levels of raw sewage monitored at these locations.

4. FLOODPLAIN ALTERATIONS. Floodplains are extremely attractive as development sites within the Santa Monica Mountains due to their broad, flat characteristics. Development in these areas alters the floodplain and destroys sensitive riparian and aquatic life forms. Streams may be channelized, changing flow characteristics. Often, downstream riparian communities are impacted from sedimentation associated with upstream activities (grading of housing pads, road development, etc). The potential for property damage and loss of life increases with each new residential home constructed in the flood prone area.

5. SEDIMENTATION. Development activities within a stream channel include filling in of stream channels with dirt to accommodate vehicular crossing. These structures impound the normal stream flow and are sources of sediment material which could be eroded and deposited downstream from the sites. The sediment which is transported by the stream will eventually fill in a riparian community, a lake, or small pond within the stream channel.

6. AIR QUALITY. Air pollution has cumulative impacts on both biological and physical components of an ecosystem. Of particular concern are the impacts associated with acid precipitation and dry deposition on a Mediterranean-type ecosystem. Studies have not been conducted to ascertain the levels of acidic concentration in the rainfall and the impacts to the natural resources in the Santa Monica Mountains.

7. FIRE CONTROL AND FIRE. One fire suppression technique utilized to stop the spread of fire in the Santa Monica Mountains is the bulldozing of fuel breaks. This practice removes the vegetation cover and exposes the soil to precipitation, wind, animal activity. One adverse impact of these fuel breaks is the overland flow associated with storm events on the site after bulldozing. Erosion is rapid on the steep slopes in these areas. The impacts to the ecosystem includes; 1) the sedimentation of stream courses and riparian communities; and 2)increases in runoff from the exposed area. Other impacts associated with fire could be a rapid and extremely dangerous build-up of toxic metals (mercury, arsenic, lead, etc) in the streams and stream sediment materials. More information is needed to determine the effects of fire on the ecosystem in regard to toxic metals increases.

8. INDIRECT IMPACTS. Support facilities are required to provide for residential services such as sewage treatment plants and landfills. Both currently operate within the mountains and have had problems in regards to environmental impacts in the past. This includs direct input of raw sewage into stream courses due to system problems and the landfill has accepted hazardous wastes.

WATER RESOURCE MANAGEMENT OBJECTIVES:

The Santa Monica Mountains contain significant natural resources which are dependent upon fresh water contributions for ecosystem stability and maintenance. The natural hydrologic regime has been altered through the importation of municipal water supplies, urban encroachment, and water quality degradation. A sound water resource program is necessary to provide park management with the data and information necessary to protect the resource and mitigate areas of impact.

Baseline water quality data are mandatory if the resource base is to be protected. Water quality degradation from raw sewage and urban runoff is of concern within the Santa Monica Mountains. A water quality monitoring project is necessary in order to ensure that the quality of water is of sufficient purity to prevent ecosystem deterioration and to provide healthful public recreation opportunities. Monitoring is needed in developed and undeveloped watersheds to determine the current water quality, assess impacts from development, mitigate impacts monitored, and to provide valuable information on unimpacted watersheds. Eventually, after sufficient data have been obtained, water quality criteria for the Santa Monica Mountains will be established in conjunction with other regulatory authorities within the mountains. These criteria will ensure compliance with Federal law by the National Park Service and will protect the resource from further deterioration.

Stream flow (discharge) data will be necessary to determine flow regimes within the Santa Monica Mountains. The water quantity monitoring project will obtain data to determine normal and impacted surface runoff rates. Peak flows will be determined from data collected at gauging stations. Flood prone areas will be evaluated for potential threats to property and life.

The hydrologic changes in discharge rates associated with development will be analyzed by the hydrologic impacts project. Historic and contemporary data from long term monitoring stations will be analyzed to determine impacts from associated development activities.

Streams will also be analyzed to determine their productivity and to classify them according to their significance for ecosystem protection. The stream productivity project will study selected stream courses within the mountains and data will be collected to determine the overall composition of the stream, species diversity of aquatic organisms, the number of organisms residing in the stream, and the stream's effectiveness as a macrohabitat. The streams monitored will be ranked in importance to the ecosystem and the information obtained input into the park preservation and lands protection programs.

Natural hydrologic inputs will also be analyzed. Rainfall contributions within the 225,000 acre Santa Monica Mountains Zone vary according to elevation above sea level and distance from the Pacific Ocean. The intent of the rainfall distribution project is to monitor rainfall at various locations. These data will be compared with data acquired from long term rainfall stations currently in operation. Analyses will be conducted to determine where the best locations are to collect accurate rainfall data. Eventually, a rainfall monitoring network representative of total rainfall will be established. This network is necessary for flood forecasting for mountain residents, to determine natural hydrologic inputs, and the program is essential for live fuels moisture determinations for fire management activities in the mountains.

The acid rain project will analyze the acidity of rainfall and dry deposition within the Santa Monica Mountains. The nature and extent of acid rain is not known and the impacts to a Mediterranean ecosystem undetermined. Acid rainfall stations in the Los Angeles basin have found acidic rain concentrations, under certain atmospheric conditions, as acidic as that found anywhere else in the world (State Air Resources Board, 1981).

Surface waters containing toxic metals is another problem in the Santa Monica Mountains. After the 1982 Dayton Canyon Fire, the USGS (in cooperation with the NPS) monitored extremely high concentrations of trace metals in the surface waters in one of the canyons which was burned. This includes toxic levels of mercury, lead, copper, total arsenic, cadmium, chromium, and zinc; all of which exceeded EPA's criteria for water quality. The toxic metals project is necessary to determine the

relationship between fire in a chaparral system and toxic metals release in developed and undeveloped areas. The information is critical for protecting the resource and has transfer value to the fire management program for the mountains.

Another area of concern in regard to human health values is the extremely high concentrations of coliform bacteria in Medea Creek which flows on park property. The coliform levels monitored in the creek greatly exceed public health values for contact and could be associated with raw sewage. The Medea Creek coliform project would determine the source of pollution and recommend mitigation in order to improve the water quality.

Other projects are required for the administration of the water resource program. Examinations into the legal aspects of water rights within the Santa Monica Mountains are necessary. The park will request assistance from the Western Region and the Water Resources Division in implementing this section of the water resource management plan due to the complexities involved. Cooperating jurisdictions involved with water resources within Los Angeles and Ventura County's will also have to be determined so that the program can be most effective in resource preservation. The cooperative program for water resource management activities will determine which agencies have jurisdiction and seek their cooperation for program implementation. Stream rehabilitation surveys will also be initiated to document impacted watersheds and riparian areas and plans developed to restore the channel and vegetation to a more natural condition. Finally, the agencies involved in water resource management within the mountains will be of paramount importance in developing water quality criteria for the mountains. The water quality project will establish standards (criteria), in cooperation with other agencies, to prevent water quality degradation and to insure the protection of the resources in the Santa Monica Mountains.

information base

INFORMATION BASE

Southern California is an arid region which contains limited water resources. Available water supplies have influenced both natural resource and regional anthropogenic development. Prior to urlandshaft (time before man's arrival) wildlife species migrated from all areas within the region, including the Santa Monica Mountains, to the Los Angeles Basin in search of water. Oil deposits were mistaken for surface waters by these animals. Trapped in the tar deposits, these animals became part of the geologic record. Their fossilized remains are currently being studied at the La Brea Tar Pits in Los Angeles.

Native American Indians were the first settlers in southern California and they had a considerable influence on the region. The two largest groups, the Chumash and Gabrielino, established large permanent villages which required stable, year round water supplies. Food supplies were collected from the ocean and extensive marsh lands within the region. These marsh lands have since diminished in size and magnitude. Many of these villages were located throughout the Santa Monica Mountains including lands currently administered by the National Park Service.

The European influence within southern California began in 1769 when Gaspar de Portola was attracted to fresh water supplies in the Rio de Porciuncula (currently the Los Angeles River). During this expedition, Portola, the Governer of Baja, camped on the east bank of the river and later in 1781 settlers in the region decided to establish their permanent residence at this site.

Water resources have continued to be of paramount importance to the region and it's development. To accommodate the regional growth in southern California, a series of aqueducts were built for municipal purposes. In the early 20th Century the Metropolitan Water District constructed the Owens Valley Aqueduct bringing water supplies to Los Angeles. Likewise, in 1941, water from the Colorado River was brought to southern California via the Colorado River Aqueduct. These developments made water supplies readily available and permitted regional development to boom. Settlement of the local population shifted from the Los Angeles Basin into the canyons and hillsides of the local mountains.

Mountain development, especially in the Santa Monica's, occurred in areas where conditions are prime for disaster. The mountains have slopes which are extremely steep, unstable, and subject to fire. Erosion rates in the Santa Monica's are high, intense winter storms frequent, and the potential loss of life and property from flooding is of concern.

Development in the floodplains has impacted the natural stream courses, the quality of waters which flow in these creeks, and it poses a threat to property and life. The Los Angeles County Flood Control District (established 1915) was created in response to the serious effects that the 1914 floods had on regional residents. In the 1930's, the LACFCD and the U.S. Army Corps of Engineers developed an extensive network of control structures, channel improvements, and impoundment basins. The program has expanded due to urban encroachments into the mountains and there are numerous examples to be found in the Santa Monica Mountains.

The National Park Service will be cooperating with the water resource agencies which operate in the Santa Monica Mountains. A specific water resource project will be initiated to document agency responsibility and to identify organizations with regulatory authority. Through this cooperative approach, the water resources within the Santa Monica Mountains will be best served.

BASIN MORPHOMETRY:

The drainage network for the Santa Monica Mountains Zone is comprised of numerous major arterials and tributaries which reflects a high degree of organization. Horton (1945) and Strahler (1950) developed a methodology of ordering streams for network analysis. Through basin morphometry, stream networks can be quantified to determine drainage basin/network properties and to establish the dynamics of stream behavior within the system. This is accomplished through stream order analysis which involves ranking tributaries within a drainage basin on the basis of total stream segments. A first order stream would have no tributaries. At the confluence of two first order streams a second order segment develops. The ordering routine continues until all streams are accounted for accordingly and the highest order stream has been determined.

This procedure was employed for network analysis throughout the Santa Monica Mountains. The drainage network included all major streams and their tributaries delineated on 7.5 minute (scale=1:24,000) USGS Quads. The analysis was inclusive of both perennial and intermittent streams.

There are a total of 828 stream segments which can be identified from USGS Quads throughout the Santa Monica Mountains Zone. This includes 179 major streams with 49 coastal outlets (Table 1). Within the zone there are a total of 656 first order stream segments, 137 second order, 29 third order, five fourth order, and one fifth order stream (Table 2). The first order segments

TABLE 1: STREAM SEGMENTS, SANTA MONICA MOUNTAINS ZONE

TOTAL STREAMS:	828
MAJOR DRAINAGES:	179
COASTAL OUTLETS:	49

TABLE 2: SANTA MONICA MOUNTAINS ZONE STREAM ORDER AND RATIOS.

STREAM ORDER	TOTAL STREAMS	BIFURCATION RATIO
1	656	4.80
2	137	4.72
3	29	5.80
4	5	5.00
5	1	-.--

MEAN BIFRUCATION RATIO: Santa Monica Mountains = 5.08

are generally of short duration, flowing in a relatively straight course with origins in the higher elevations. The higher the stream order, the greater the stream's tendency to travel greater distances and increase it's sinuousity.

The nature of the geometric progression for the stream courses in the Santa Monica Mountains was determined through the generation of bifurcation ratios for the drainage network. These ratios were determined through the comparison of the number of stream segments at a given order to those of the next lower designated order. Most stream networks have bifurcation ratios which range between 3.5 and 4.5 (Leopold, 1974).

In the Santa Monica Mountains, bifurcation ratios are slightly above the 3.5 to 4.5 range (Table 2). There are 4.8 first order stream segments for every second order stream within the mountains. Likewise, there are 4.72 second order segments for every third order stream. The range of third to fourth order streams was 5.8 and fourth vs. fifth was 5.0. The higher ratios for these last two comparisons is due to the well developed and extensive dendritic drainage patterns in the Santa Monica Mountains which are a result of active mountain building and the severity in steepness of slopes.

The linear progression of stream order for the Santa Monica Mountains can better be illustrated through semilogarithmic plots (Figure 1). A straight line progression in decreasing stream order is apparent. This relationship between all 5 stream orders and the associated number of stream segments demonstrates that the overall character of stream patterns and flow is highly organized and tends toward efficiency of drainage. The slope of the plotted line is a function of stream order (x axis) against the total stream segments of that order (y axis). The straightness of fit is indicative of the constant ratio of the lower ordered streams to those of the next higher order.

Stream analysis for all watersheds in the Santa Monica Mountains was completed (Table 3). The largest watershed within the zone is the Malibu Watershed. It contains a total of 105 square miles and it incorporates several major drainage basins (Medea Creek, Triunfo Creek, Cold Creek, Malibu Creek, Sleeper, Las Virgenes, and Potrero Valley). The Malibu watershed contains a total of 225 stream segments within six major drainages.

Conversely, the smallest stream courses in the Santa Monica Mountains are the "isolated" drainages. These streams represent those segments which are unnamed on USGS Quads and in most cases are only first order streams. This group comprises 17 percent of all streams which represents a total of 131 segments.

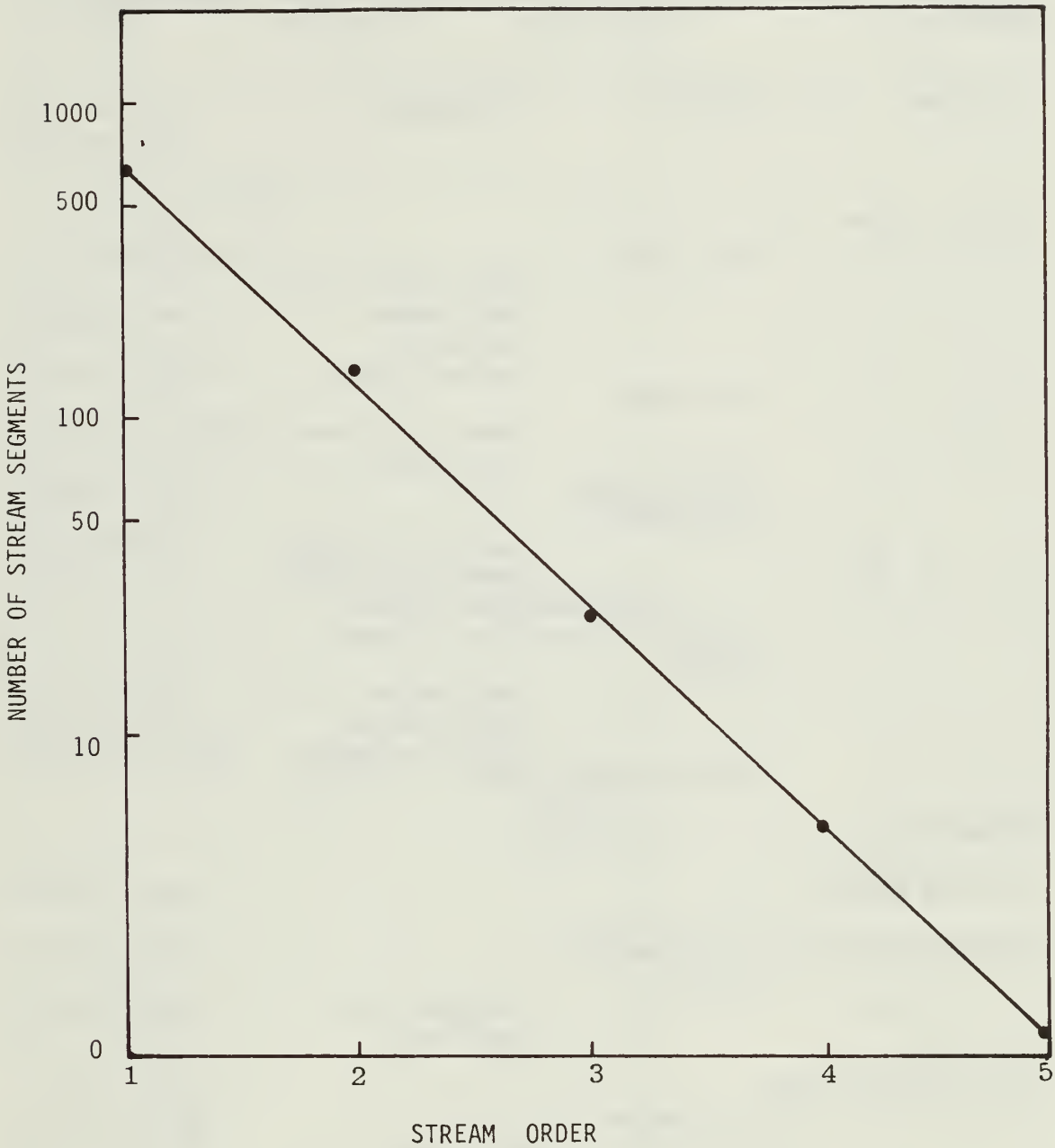

Figure 1: Linear Progression of Stream Order, Santa Monica Mountain Zone

TABLE 3: SANTA MONICA MOUNTAINS WATERSHEDS, STREAM SEGMENTS AND ORDER.

WATERSHED	DRAINAGE	TRIBUTARIES	STREAM ORDER 1	2	3	4	5
MALIBU CANYON (1)			176	37	8	3	1
	MEDEA CREEK		44	9	3		
		Upper Medea Creek	14	4	1	0	0
		Palo Comado	6	1	0	0	0
		Cheeseboro	5	1	1	0	0
		Lindero Canyon	12	2	1	0	0
	COLD CREEK		20	5	1	0	0
		Upper Cold Creek	114	4	1	0	0
		Dark Canyon	5	1	0	0	0
	SLEEPER CANYON		2	1	0	0	0
	LAS VIRGENES		22	4	1	0	0
		East Las Virgenes	5	1	0	0	0
		Stokes Canyon	8	1	0	0	0
		Gates Canyon	1	0	0	0	0
		Liberty Canyon	3	1	0	0	0
	TRIUNFO		25	4	1	1	0
		Lobo Canyon	9	2	1	0	0
		Trough Canyon	1	0	0	0	0
		La Sierra Canyon	7	1	0	0	0
	POTRERO VALLEY CREEK		29	7	1	0	0
ISOLATED (2)			131	20	1	0	0
LA JOLLA CANYON			8	2	1	0	0
CALLEGUAS CREEK (3 - not complete)			12	6	3	1	0
	CALLEGUAS		12	6	3	1	0
		Calleguas Creek	4	4	2	1	0
		Long Grade	8	2	1	0	0
BIG SYCAMORE CANYON			53	10	2	0	0
	BIG SYCAMORE		53	10	2	0	0
		Big Sycamore	35	7	1	0	0
		Wood Canyon	7	1	0	0	0
		Serrano Canyon	11	2	1	0	0
LITTLE SYCAMORE CANYON			14	3	1	0	0
DEER CANYON			5	1	0	0	0
ARROYO SEQUIT			30	7	2	1	0
	ARROYO SEQUIT		30	7	2	1	0
		Arroyo Sequit	9	2	0	1	0
		East Fork	12	3	1	0	0
		West Fork	9	2	1	0	0

WATERSHED	DRAINAGE	TRIBUTARIES	STREAM ORDER 1	2	3	4	5
WILLOW CREEK			1	0	0	0	0
SAN NICHOLAS CANYON			3	1	0	0	0
LOS ALISOS CANYON			2	1	0	0	0
LACHUSA CANYON			2	1	0	0	0
ENCINAL CANYON			4	1	0	0	0
STEEP HILL CANYON			1	0	0	0	0
TRANCAS CANYON			21	5	1	0	0
ZUMA CANYON			20	3	1	0	0
	ZUMA		20	3	1	0	0
		Zuma Creek	16	2	1	0	0
		Newton Canyon	4	1	0	0	0
WALNUT CANYON			2	1	0	0	0
SOLSTICE CANYON			9	2	1	0	0
	SOLSTICE		9	2	1	0	0
		Solstice	8	2	1	0	0
		Dry Canyon	1	0	0	0	0
CORRAL CANYON			6	2	1	0	
PUERCO CANYON			3	1	0	0	0
MARIE CANYON			3	1	0	0	0
WINTER CANYON			1	0	0	0	0
CARBON CANYON			6	1	0	0	0
LAS FLORES			9	2	1	0	0
	LAS FLORES		9	2	1	0	0
		Las Flores	8	2	1	0	0
		Little Las Flores	1	0	0	0	0
PIEDRA GORDA CANYON			1	0	0	0	0
PENA CANYON			1	0	0	0	0
TUNA CANYON			2	1	0	0	0
RAMIREZ CANYON			9	1	0	0	0

WATERSHED	DRAINAGE	TRIBUTARIES	STREAM ORDER 1	2	3	4	5
ESCANDIDO CANYON			5	1	0	0	0
LATIGO CANYON			2	1	0	0	0
ARROYO CONEJO			9	2	0	0	0
SKELETON CANYON			7	1	0	0	0
SCHOOLHOUSE CANYON			5	2	0	0	0
WINDMILL CANYON			2	1	0	0	0
TOPANGA CANYON			46	9	2	0	0
	OLD TOPANGA		13	4	1	0	0
		Old Topanga	9	2	1	0	0
		Red Rock	2	1	0	0	0
		Hondo	2	1	0	0	0
	GREENLEAF		18	4	1	0	0
	UPPER TOPANGA		18	4	1	0	0
		Upper Topanga	17	4	1	0	0
		Santa Maria Canyon	1	0	0	0	0
	LOWER TOPANGA		14	1	0	0	0
		Lower Topanga	12	1	0	0	0
		Dix Canyon	1	0	0	0	0
		Brookside Canyon	1	0	0	0	0
SANTA YNEZ CANYON			17	4	1	0	0
	SANTA YNEZ		13	2	1	0	0
	QUARRY CANYON		2	1	0	0	0
	TRAILER CANYON		2	1	0	0	0
PULGA CANYON			2	1	0	0	0
TEMESCAL CANYON			3	1	0	0	0
SANTA MONICA CANYON			23	4	2	0	0
	SANTA MONICA CANYON		8	2	1	0	0
		Santa Monica Canyon	0	0	1	0	0
		Sullivan Canyon	3	1	0	0	0
		Mdandeville Canyon	4	1	0	0	0
		Kenter Canyon	1	0	0	0	0
	RUSTIC CANYON		15	2	1	0	0

(1) Watersheds were broken down into three categories: watersheds, drainages, and tributaries. The sum of the tributaries equals the stream segments for each drainage. Likewise, the sum of the drainages equals the stream segments in a watershed. For example, the MALIBU

CREEK WATERSHED has 176 first order streams. The Medea Creek drainage of Malibu Creek contributes 44 of the 176 stream segments in the watershed. Of the 44 segments in Medea Creek, 14 are contributed by Upper Medea Creek, 6 from Palo Comado, 5 from Cheeseboro, and 12 from Lindero Canyon.

(2) Isolated watersheds are those which are self contained drainages that have not been identified by names on the USGS Quads.

(3) Calleguas Creek Watershed was not completed because much of it's drainage is outside of the NRA and beyond the scope of the Water Resource Management Plan. Only tributaries relevant to SAMO have been included.

SURFACE WATERS, STREAMS AND LAKES:

The Santa Monica Mountains Zone contains a total of 828 major streams and tributaries (Figure 2). Of the 828 streams within the Zone, less than 10 percent of the streams have formally been named and recognized on USGS quads. There are only 76 streams with formal place names (Table 4). This includes four perennial streams and 73 major intermittent streams. A total of 15 streams identified on the USGS Quads flow on NPS lands. Medea Creek is the only perennial stream flowing on park lands and it's continuous flow is a result of urban runoff.

There are no naturally occurring lakes in the Santa Monica Mountains. This reflects the drought characteristics present in southern California during the summer months. However, within the Santa Monica Mounatins Zone, there are a total of 8 lakes created by artificial means. Of these impoundments, 20 are situated within the 150,000 acre National Recreation Area boundary and 17 have been identified by proper names on the USGS quads (Table 5).

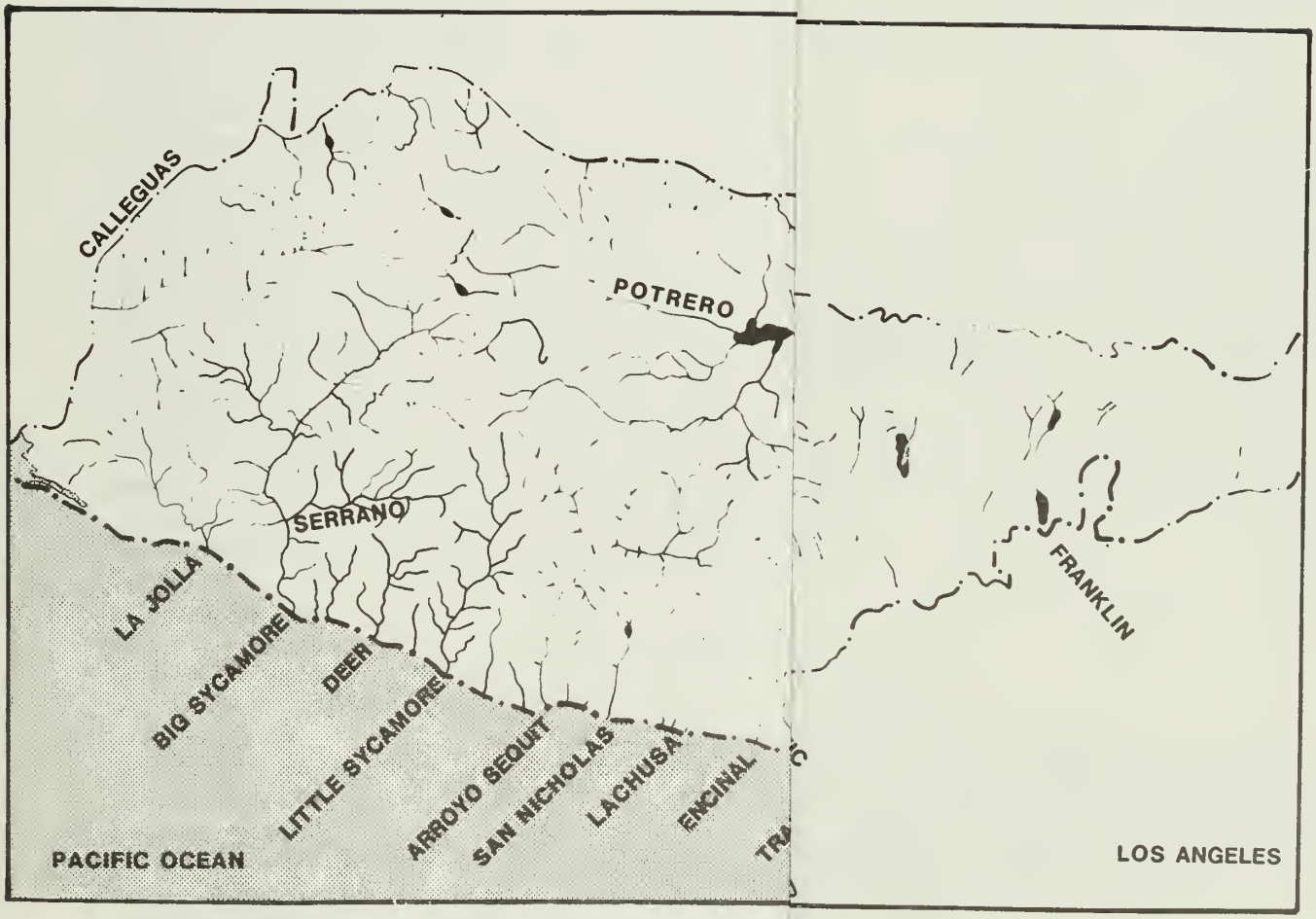

FIGURE 2: Surface Waters (Streams and Lakes), Santa Monic

SURFACE WATERS: SANTA MONICA MOUNTAINS ZONE

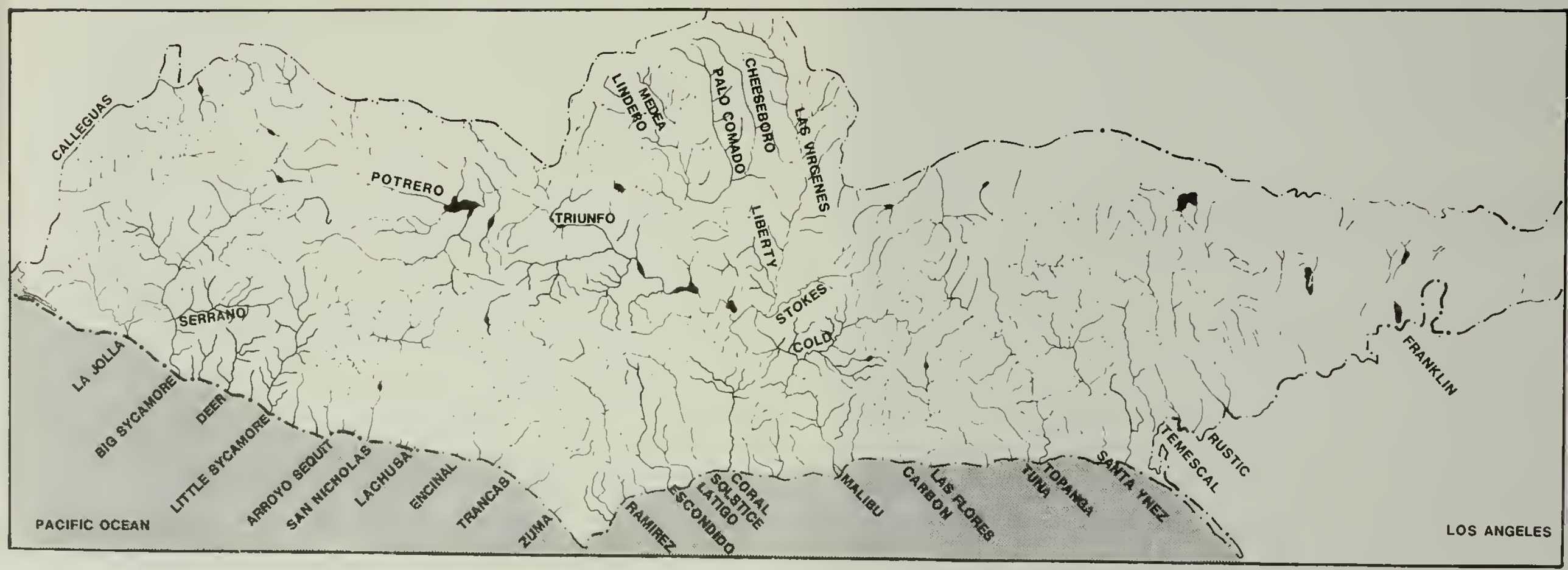

FIGURE 2: Surface Waters (Streams and Lakes), Santa Monica Mountains Zone

TABLE 4: SURFACE WATERS, SANTA MONICA MOUNTAIN ZONE

STREAM	PERENNIAL (BLUE LINE) USGS*	INTERMITTENT	NPS
Arroyo Conejo		x	
Arroyo Sequit		x	x
Arroyo Sequit, East Fork	*	x	x
Arroyo Sequit, West Fork		x	
Big Sycamore	*	x	
Brookside Canyon		x	
Calleguas Creek	x		
Carbon Canyon		x	
Cheeseboro		x	x
Cold Creek	*	x	
Coral Canyon		x	x
Dark Canyon		x	
Deer Canyon		x	
Dix Canyon		x	
Dry Canyon		x	
Encinal Canyon		x	
Escondido Canyon		x	x
Gates Canyon		x	
Greenleaf Canyon		x	
Hondo Canyon		x	x
Kenter Canyon		x	
Lachusa Canyon		x	x
La Jolla Canyon		x	
La Sierra Canyon		x	
Las Flores Canyon		x	
Las Virgenes		x	
Las Virgenes, east		x	x
Latigo Canyon		x	
Liberty Canyon		x	
Lindero Canyon		x	
Little Las Flores		x	
Little Sycamore		x	
Lobo Canyon		x	x
Long Grade Canyon		x	
Los Alisos Canyon		x	
Malibu Creek	x		
Mandeville Canyon		x	
Marie Creek		x	

STREAM	PERENNIAL (BLUE LINE) USGS*	INTERMITTENT	NPS
Medea Creek	x		x
Newton Canyon		x	x
Old Topanga		x	
Palo Comado		x	
Pena Canyon		x	
Piedra Gorda Canyon		x	
Potrero Valley		x	
Puerco Canyon		x	
Pulga Canyon		x	
Quarry Canyon		x	
Ramirez Canyon		x	x
Red Rock Canyon		x	
Rustic Canyon	*	x	
San Nicholas Canyon		x	
Santa Maria Canyon		x	
Santa Monica Canyon		x	
Santa Ynez Canyon	*	x	
School House Canyon		x	
Serrano Canyon		x	x
Sheleton Canyon		x	
Sleeper Canyon		x	
Solstice Canyon	*	x	x
Steep Hill Canyon		x	
Stokes Canyon		x	
Sullivan Canyon		x	
Temescal Canyon		x	
Topanga Canyon	x		
Trailer Canyon		x	
Trancas Canyon	*	x	
Triunfo Canyon		x	
Trough Canyon		x	
Tuna Canyon	*	x	
Walnut Canyon		x	
Willow Canyon		x	
Windmill Canyon		x	
Winter Canyon		x	
Wood Canyon		x	
Zuma Canyon	*	x	x

* Segments of these streams are perennial but are not identified as such on USGS Quads.

TABLE 5: LAKES, SANTA MONICA MOUNTAIN ZONE

LAKES	225,000 ZONE	150,000 NRA	PROPERTY STATUS
Calabasas Lake	x		N
Century Reservoir	x	x	Y
Encino Reservoir	x	x	Y
Franklin Canyon Reservoir	x	x	Y
Gerard Reservoir	x	x	Y
Lake Eleanor	x		N
Hollywood Reservoir (Upper)	x	x	Y
Hollywood Reservoir (Lower)	x	x	Y
Lake Lindero	x		N
Lake Sherwood	x		N
Las Virgenes Reservoir	x	x	Y
Malibu Lake	x	x	N
Nicholas Flats	x	x	Y
Stone Canyon Reservoir	x		Y
Upper Franklin Canyon Reservoir	x	x	Y
Lower Franklin Canyon Reservoir	x	x	Y
Westlake Lake	x		N

Y= PUBLIC Ownership (does not imply public access)
N= PRIVATE Ownership

CLASSIFICATION OF SURFACE WATERS BY EXISTING USE:

Pursuant with the instructions for preparation of Water Resource Management Plans (NPS, 1979) and in accordance with Section 303 of the Clean Water Act providing for the establishment of water quality standards, the surface waters in the Santa Monica Mountains are classified by their existing use. The categories considered by this classification are either as a primary (P) or secondary (S) useage. This classification represents currently available information on these water courses and impoundments. However, due to the lack of resource data within the Santa Monica Mountains, this classification does not reflect an inclusive categorization of all attributes for all streams and their significance for ecosystem preservation. As more information becomes available through active resource management programs, this classification will be updated to reflect these changes.

CLASSIFICATION OF SURFACE WATERS BY THEIR EXISTING USE

1. PUBLIC WATER SUPPLY.

Encino Reservoir (P)
Gerard Reservoir, out of service (P)
Hollywood Reservoir: Lower (P)
Hollywood Reservoir: Upper (P)
Las Virgenes Reservoir (P)
Lower Franklin Canyon Reservoir (P)
Stone Canyon Reservoir (P)

2. NON-PUBLIC WATER SUPPLY.

Private Wells (P)

3. MAINTENANCE OF ECOSYSTEM, GENERAL.

All natural water courses (P)

4. MAINTENANCE OF ECOSYSTEM, HABITAT OF PLANTS AND ANIMALS OF SPECIAL INTEREST, OTHER THAN THREATENED OR ENDANGERED.

Coastal drainages from Latigo Point to the westernmost boundary of Point Mugu: varied and extremely rich marine and littoral biota. Designated "Area of special Biological Significance" by the California State Water Resources Board (P)

All streams with *Acer macrophyllum* (Big Leaf Maple) (P)

All riparian communities (P)

Malibu Lagoon: wetlands area (P)

Mugu Lagoon: wetlands area and indicator species *Salicornis* (rare) (P)

La Sierra Canyon (upper): *Dudleya cymosa* var. *marcesens* and *Cornus glabrata* (restricted to this location) (P)

Cold Creek: one of the most diverse botanical areas, native grasses (*Stipa pulchra*), sensitive species *Pentachaeta lyonii* (State Endangered), and *Orobanche bulbosa* (P)

Tuna Creek: pristine riparian vegetation, *Camarostaphylos diversifolia* var. *planaifolia* (rare) and *Polygala Cornuta* var. *fishiae* (P).

Temescal, Rustic, Sullivan Creeks: large contiguous watersheds (P)

Encino Reservoir: some of the best undisturbed stands of chaparral, coastal sage scrub, and riparian vegetation on the inland side of the Santa Monica Mountains (P)

Big Sycamore Creek: significant sycamore woodland (P)

Deer Creek: almost pure stands of coastal sage scrub and pristine riparian area (P)

Palo Comado and Cheeseboro Creeks: one of the last examples of the classic California landscape, valley oak savanna (P)

Trancas: Lobelia dunnii var. serrata (uncommon) (P)

Zuma (upper): Plagiobothrys acanthocarpus (uncommon) (P)

Malibu Creek: Apocynum cannabium var. glaberinum, Notholaena californica, Monolopia lanceolata, Senecio brewerii, Cornus glabrata, Sedum spathulifolium, Monardella hypolenca, Vicia americana Polygala cornuta spp. fishiae; all considered rare (P)

Encinal Creek: Thelypteris puberula (rare) (P)

Las Virgenes Canyon: Silene antirrhina, Silene multinervia, all considered rare, (P).

Los Alisos Canyon: Silene antirrhina, Silene multinervia, rare (P)

Stokes Creek: Erigeron foliolosus var. stenophyllus (P)

Little Sycamore: Dudleya cymosa spp. marcescens, Pholistoma racemosum, State rare (P)

Topanga Creek: Camarostaphylos diversifolia var. planaifolia, Monardella hypolenca, and Orobanche bulbosa, rare (P)

Rustic Canyon: Camarostaphylos diversifolia var. planaifolia (P)

Arroyo Sequit: Oenothera hookeri spp. grisea (rare) and Festuca pacifica (P)

Laurel Canyon: Orobanche grayana, rare (P)

Temescal Canyon: Festuca octoflora, rare (P)

Latigo Canyon: Lycuim californicum (P)
(rare refers to occurrence in the Santa Monica Mountains)

5. MAINTENANCE OF ECOSYSTEM, HABITAT OF LISTED, THREATENED, OR ENDANGERED SPECIES INDIGENOUS TO PARK.

Mugu Lagoon: Cordylanthus maritimus var. maritimus (endangered) (P)

6. AESTHETICS.

All natural water courses (S)

7. MAINTENANCE OF HISTORIC SETTING.

All natural water courses (S)

8. RECREATIONAL PURPOSES, BODY CONTACT (SWIMMING, WADING BY CHILDREN, WATER SKIING).

Pacific Ocean beaches (P)

Limited water courses (S)

9. RECREATIONAL PURPOSES, NON-CONTACT (FISHING, BOATING, NATURE STUDY).

All natural water courses (nature study) (S)

10. AGRICUTURAL, SOURCE FOR IRRIGATION SUPPLY.

Calleguas Creek (S)

11. AGRICULTURAL, SOURCE FOR LIVESTOCK WATER SUPPLY.

None.

12. DISPOSAL OF SEWAGE EFFLUENT.

Zuma Creek (S)
Malibu Creek (S)
Calleguas Creek (S)

FLOODPLAINS:

Within the Santa Monica Mountains most of the 100 and 500 year floodplains have not been delineated because the watersheds have

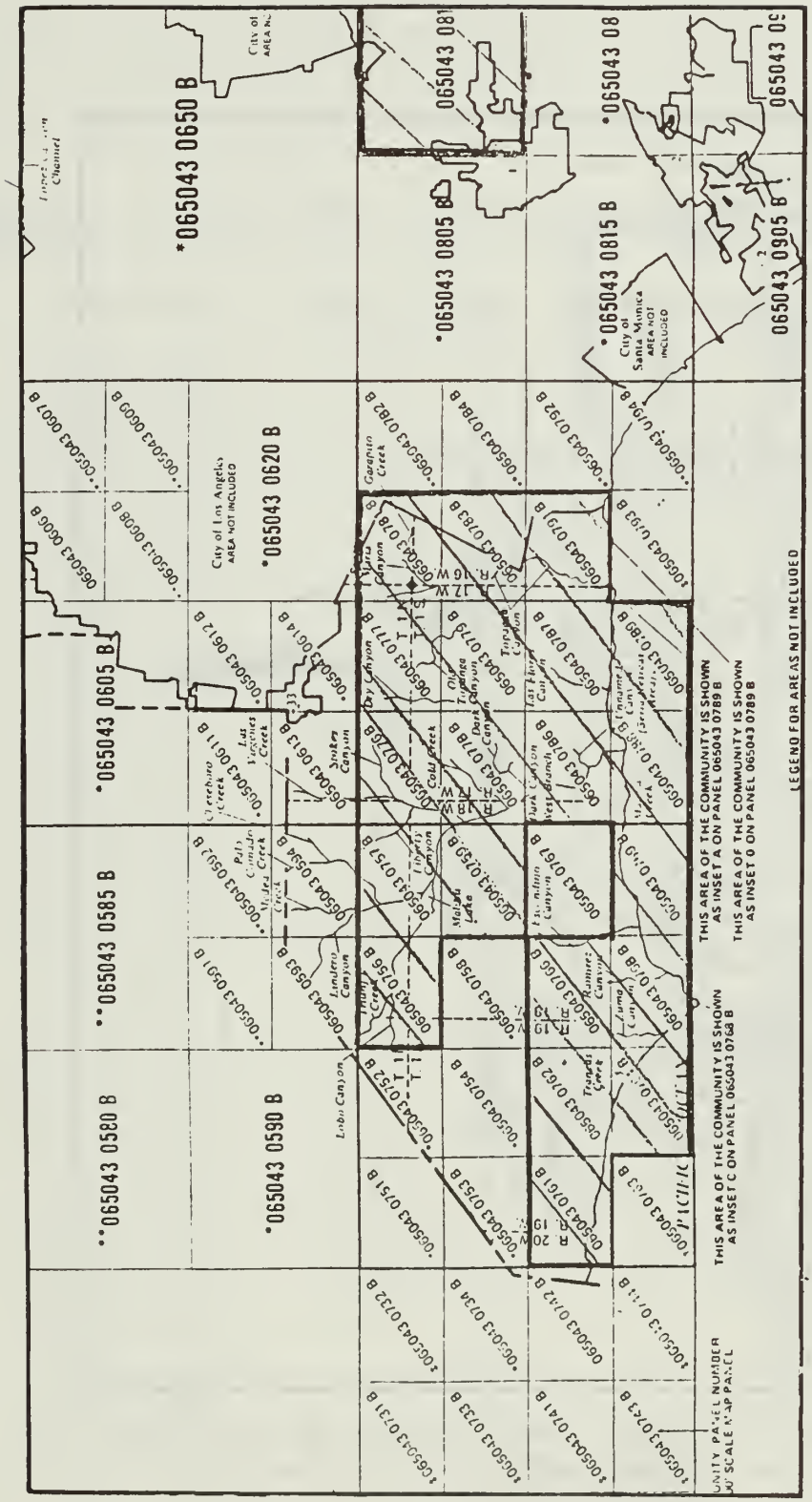

FIGURE 3: Floodplain Maps (100 and 500 Year Floods), Los Angeles County, Shaded Area Represents those Maps Currently on File at Park Headquarters.

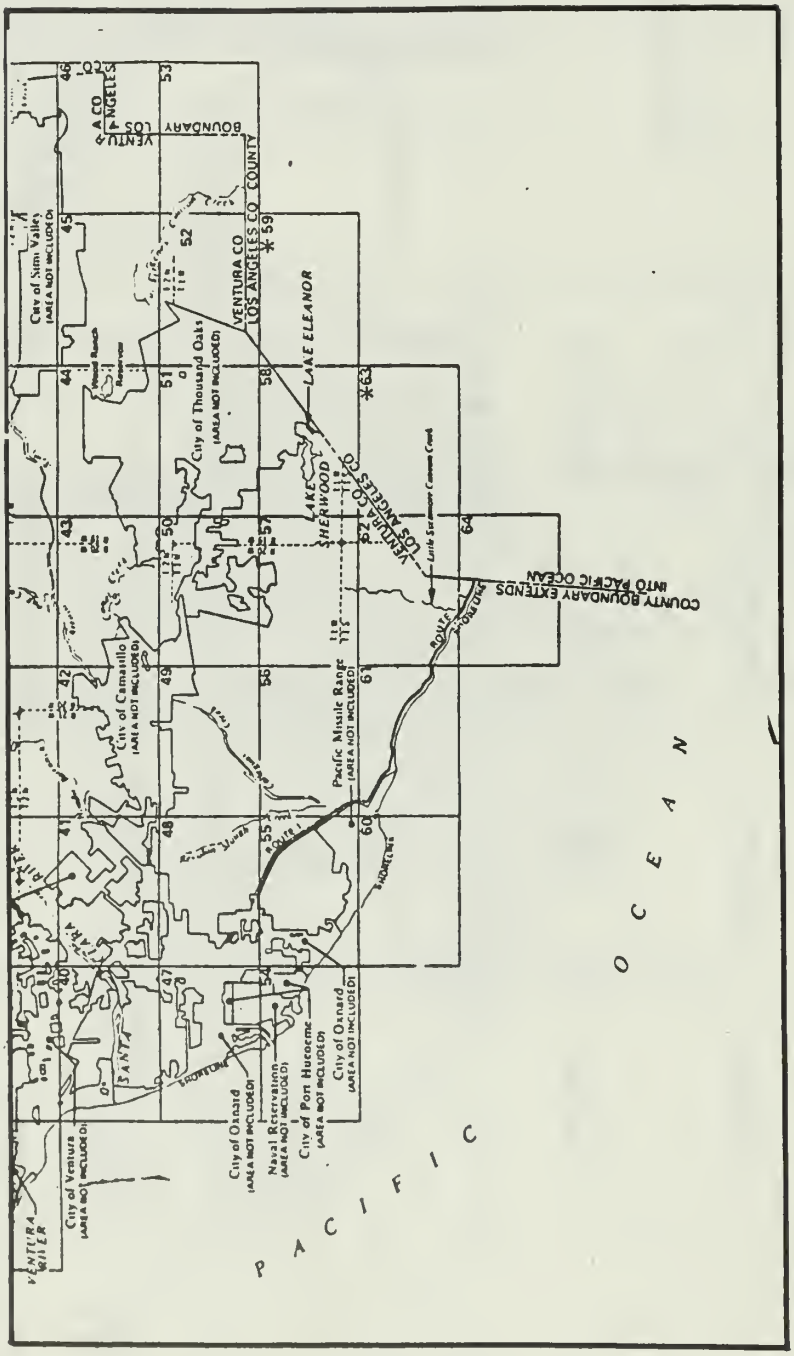

FIGURE 4: Floodplain Maps (100 and 500 Year Floods) For Ventura County.

not been extensively developed. However, in areas with the greatest development, floodplains were delineated for the FIRMS program (Flood Insurance Rate Maps)(Figure 3 and Figure 4; Tables 6 and 7). Most of these maps for Los Angeles County have been acquired and are currently on file at park headquarters. The coverage for Ventura County is extremely limited and those areas where delineations were made are mostly in the preliminary phase of the project. Once these panels are completed and printed, the park will acquire them.

TABLE 6. LOS ANGELES COUNTY FLOODPLAIN MAPS FOR THE SANTA MONICA MOUNTAINS

MAP NUMBER*	PANEL PRINTED		ON FILE AT SAMO	
	yes	no	yes	no
065043-0592 B	X		X	
065043-0594 B	X		X	
065043-0611 B		X		X
065043-0613 B		X		X
065043-0752 B		X		X
065043-0753 B		X		X
065043-0754 B		X		X
065043-0756 B	X		X	
065043-0757 B	X		X	
065043-0758 B		X		X
065043-0759 B	X		X	
065043-0761 B	X		X	
065043-0762 B	X		X	
065043-0764 B	X		X	
065043-0766 B	X		X	
065043-0767 B	X			X
065043-0768 B	X		X	
065043-0769 B	X		X	
065043-0776 B	X		X	
065043-0777 B	X		X	
065043-0778 B	X		X	
065043-0779 B	X		X	
065043-0781 B	X		X	
065043-0782 B		X		X
065043-0783 B	X		X	
065043-0784 B		X		X
065043-0786 B	X		X	
065043-0787 B	X		X	
065043-0788 B	X		X	
065043-0789 B	X		X	
065043-0791 B	X		X	
065043-0792 B		X		X
065043-0793 B		X		X
065043-0794 B		X		X
065043-0805 B		X		X
065043-0810 B	X		X	

* Panel numbers correspond to the designated community panel numbers in conjunction with the FIRMS Program

TABLE 7. VENTURA COUNTY FLOODPLAIN MAPS WITHIN THE SANTA MONICA MOUNTAINS

MAP NUMBER	PANEL PRINTED		ON FILE AT SAMO	
	yes	no	yes	no
060422-0025 B	X			X
060413-0037 A		X		X
060413-0038 A		X		X
060413-0040 A		X		X
060413-0053 A		X		X
060413-0055 A		X		X
060413-0056 A		X		X
060413-0057 A		X		X

(note: Panel Numbers 060413-0037 A to 060413-0057 A have been completed in the preliminary phase for the FIRMS program and are on file at Ventura County Flood Control District)

WATER QUALITY:

Water quality data are relatively non-existent for the Santa Monica Mountains. Monitoring conducted by state, local, and private agencies occurs at infrequent intervals or for limited areas within the mountains. Data which are obtained are difficult to track and acquire due to the number of agencies involved. The agencies most concerned with water quality monitoring activities include Los Angeles County Flood Control District, Ventura County Flood Control District, Los Angeles County Department of Public Health, the California State Water Resources Control Board, and the Las Virgenes Municipal Water District.

During Fiscal Year-1982 the National Park Service, in cooperation with the U.S. Geological Survey, implemented a water quality monitoring program throughout the Santa Monica Mountains. Monitoring activities were conducted in both Los Angeles and Ventura Counties. The purpose of the program was to obtain baseline water quality data in undeveloped, developed, and intermediately developed watersheds. Data were collected during both wet and dry seasons to document seasonal variability. The program has continued through FY-84 and it is anticipated that it will continue during future fiscal years. Eventually, these data will be of importance in documenting current water quality parameter concentrations which will serve as criteria for assuring that no degradation of water occurs within the Santa Monica Mountains Zone. This will be in conjunction with Public Law 92-500, Sections 208 and 303, which requires NPS coordination with the Environmental Protection Agency (EPA) and

the State for establishing state wide water quality criteria. More specifically, the program relates to the establishment of water quality standards for NPS areas in accordance with the Director's (National Park Service) memorandum to Assistant Secretary of Fish and Wildlife and Parks (Interior Department), September 15, 1976, subject EPA 208 guidelines.

Data obtained by the park's water quality program were collected by the U.S. Geological Survey, with assistance from staff personnel. A limited statistical analysis was completed on the first two years data to determine the distribution (maximum/minimum) of each parameter and it's relative mean (Table 8). It must be emphasized that these data reflect limited monitoring and were collected at only 10 sites within the mountains during FY-82 and FY-83.

A total of 70 constituents have been identified as components in the surface waters of the Santa Monica Mountains. The occurrence and distribution of each constituent can best be determined by the number of samples which reflect each constituent's presence. The smallest number of samples for any given constituent was two samples and, conversely, the highest number of samples available for a specific constituent was 44 samples. Most of the parameters appear to be within reasonable water quality limits. However, further study and greater sampling size will be necessary before definitive statements can be made regarding the overall water quality within the mountains.

A cursory examination of the total dissolved solids transported by the surface waters in the Santa Monica's demonstrates the apparent impacts associated with urbanization (Figure 5). Even though the lithology, for the most part, remains fairly constant for most of these plots, there is definitely a shift in the chemical composition in downstream surface waters. This is best illustrated by the changes in chemical constituents between Cold Creek (undeveloped) and Malibu Creek (developed). The chlorine ion concentration changed from 5 percent to 9 percent and the sulfate concentration changed from 11 percent to 28 percent. Conversely, bicarbonate and calcium concentrations were much higher in the non-developed as opposed to the developed areas (36 percent and 24 percent versus 14 percent and 18 percent, respectively). The concentrations of chemical constituents monitored in Malibu Lagoon were not compared with this examination due to the suspected presences of salt water in the sample. The specific conductance for the lagoon during this sampling was 10,000 umhos which might indicate a salt/fresh water mix.

Areas of concern detected by this monitoring program include extremely toxic levels of heavy metals such as mercury, lead, cadmium, chromium, and zinc. These levels were monitored after a very intense fire (Dayton Canyon Fire, October, 1982) burned the complete watershed. Greater information is necessary to

SANTA MONICA MOUNTAINS ZONE WATER QUALITY

PARAMETER	# SAMPLES	MIN	MAX	MEAN	EPA CRITERIA
TEMPERATURE	44	14	29	15.72	N.A.
TURBIDITY (FTU)	2	5	8.9	6.95	N.A.
SPECIFIC CONDUCTANCE (UMHOS)	37	410	3900	1257	N.A.
OXYGEN, DISSOLVED (MG/L)	38	3.2	11.5	9.29	5
pH (FIELD UNITS)	33	7.2	8.6	8.11	6.5-9.0
NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	39	0.09	7.2	1.24	10 (H)
PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	21	0.06	8.3	1.1	N.A.
PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	38	0.02	2.7	0.25	N.A.
HARDNESS (MG/L AS CaCO3)	38	140	1600	548.42	N.A.
CALCIUM DISSOLVED (MG/L AS Ca)	35	31	280	113.46	N.A.
MAGNESIUM, DISSOLVED (MG/L AS Mg)	38	14	270	70.84	N.A.
SODIUM, DISSOLVED (MG/L AS Na)	39	17	1700	137.41	N.A.
SODIUM ADSORPTION RATIO	38	0.6	19	2.32	N.A.
PERCENT SODIUM	39	13	69	26.82	N.A.
POTASSIUM, DISSOLVED (MG/L AS K)	39	0.9	61	5.25	N.A.
CHLORIDE, DISSOLVED (MG/L AS Cl)	39	15	3200	176	N.A.
SULFATE DISSOLVED (MG/L AS SO4)	38	14	1200	399.11	N.A.
FLUORIDE, DISSOLVED (MG/L AS F)	39	0.2	0.7	0.4	N.A.
SILICA, DISSOLVED (MG/L AS SiO2)	39	2.6	47	23.23	N.A.
ARSENIC TOTAL (UG/L AS As)	17	0	32	5.18	50 (H)
BORON, DISSOLVED (UG/L AS B)	39	50	3900	450.51	750
CADMIUM, TOTAL RECOVERABLE (UG/L AS Cd)	15	10	470	48	1.2 (S) 12 (F)
CADMIUM RECOV. FROM BOTTOM MATERIAL (UG/L)	6	1	10	5.5	N.A.
CHROMIUM, TOTAL RECOVERABLE (UG/L AS Cr)	12	10	450	128.33	50H/100F
COPPER, TOTAL RECOVERABLE (UG/L AS Cu)	12	20	640	149.17	N.D.
COPPER, RECOV. FM BOTTOM MATERIAL (UG/G)	4	5	20	10.75	N.D.
IRON, DISSOLVED (UG/L AS Fe)	39	3	290	37.67	1F
LEAD, TOTAL RECOVERABLE (UG/L AS Pb)	16	100	500	150	50H/N.D.F
NICKEL, TOTAL RECOVERABLE (UG/L AS Ni)	7	100	200	142.86	N.D.
ZINC, TOTAL RECOVERABLE (UG/L AS Zn)	16	20	2500	375.63	N.D.
SELENIUM, TOTAL (UG/L AS Se)	11	1	100	23.55	10H/N.D.F
COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	19	36	60000	5920	200/100ML
STREPTOCOCCI FECAL, KF AGAR (COLS/100 ML)	19	82	107000	18670	N.A.
PROPAZINE TOTAL (UG/L)	20	0	0.1	0.04	N.A.
SIMETRYNE TOTAL (UG/L)	19	0	0.1	0.053	N.A.
SIMAZINE TOTAL (UG/L)	19	0	2.6	0.637	N.A.
PROMETONE TOTAL (UG/L)	19	0	0.2	0.068	N.A.
PROMETRYNE TOTAL (UG/L)	19	0	0.1	0.053	N.A.
ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	0.003
LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	0.01
CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	3	1	13	5.67	N.A.
DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	1.5	0.55	N.A.
DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	1.9	0.625	N.A.
DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.4	0.175	0.001
DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.6	0.225	0.003
ENDOSULFAN, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	0.003
ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	.005 F
TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	10	10	10	.001 S
HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	N.A.

PARAMETER	# SAMPLES	MIN	MAX	MEAN	EPA CRITERIA
HEPTACHLOR EPOXIDE TOT. IN BOTTOM MAT (UG/KG)	4	0.1	0.1	0.1	.03 S
MALATHION, TOTAL (UG/L)	7	0.01	0.01	0.01	0.1
METHOXYCHLOR, TOTAL IN BOTTOM MAT (UG/KG)	2	0.1	0.1	0.1	N.A.
METHYLPARATHION, TOTAL (UG/L)	7	0.01	0.01	0.01	N.A.
METHYLTRITHION, TOTAL (UG/L)	7	0.01	0.01	0.01	N.A.
PARATHION, TOTAL (UG/L)	7	0.01	0.01	0.01	0.04
PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	2	1	4	2.5	N.A.
ATRAZINE, TOTAL (UG/L)	19	0	3	0.633	N.A.
MIREX, TOTAL IN BOTTOM MATERIAL (UG/KG)	4	0.1	0.1	0.1	.001 S
SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED	21	240	6500	1301	N.A.
SOLIDS, SUM OF CONSTITUENTS, DISSOLVED	21	221	6470	1240	N.A.
SOLIDS, DISSOLVED (TONS PER ACRE-FOOT)	21	0.33	8.84	1.77	N.A.
SOLIDS, DISSOLVED (TONS PER DAY)	8	0.25	67.4	12.5	N.A.
MERCURY TOTAL RECOVERABLE (UG/L AS Hg)	11	0.1	2.2	0.482	0.05
MERCURY RECOV. FM BOTTOM MATERIAL (UG/G)	5	0.01	0.2	0.094	N.A.
CYANAZINE TOTAL (UG/L)	9	0	0.1	0.08	N.A.
PERTHANE IN BOTTOM MATERIAL (UG/KG)	3	1	1	1	N.A.
TRITHION, TOTAL (UG/L)	7	0.01	0.01	0.01	N.A.
AMETRYNE TOTAL	18	0	0.1	0.05	N.A.
ATRATONE TOTAL (UG/L)	18	0	0.1	0.056	N.A.
CYPRAZINE TOTAL (UG/L)	16	0	0.1	0.056	N.A.
SIMETONE TOTAL (UG/L)	19	0	0.1	0.053	N.A.
ALKALINITY LAB (MG/L AS $CaCO_3$)	35	53	328	206.17	N.A.
HARDNESS NONCARBONATE (MG/L AS $CaCO_3$)	39	12	1300	347.62	N.A.

EPA CRITERIA CODES
- H= Health Value
- F= Fresh Water Value
- S= Salt Water Value
- NA= Currently Not Available
- ND= Not Determined Due To Bioassay Requirements

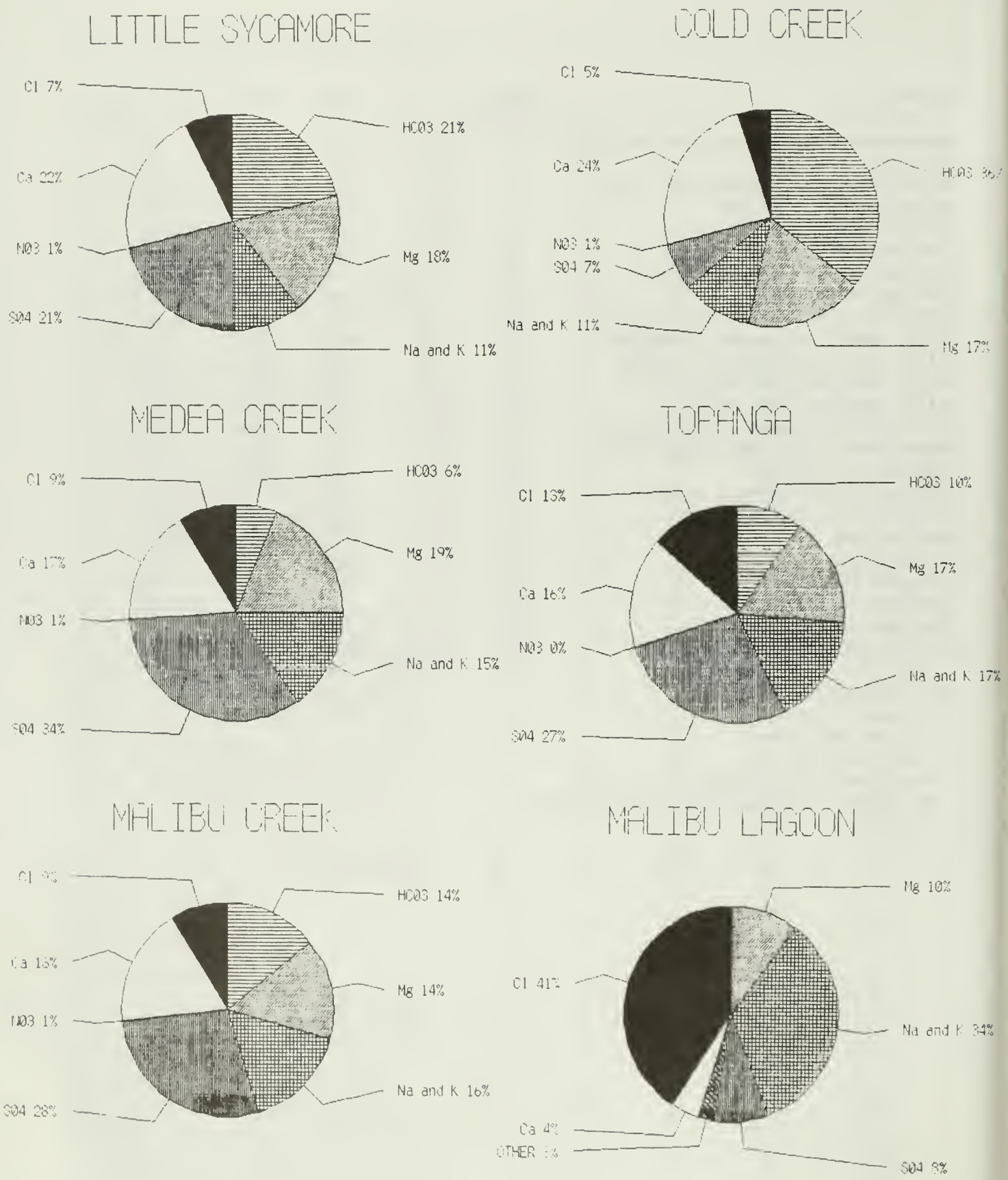

FIGURE 5: Comparative Composition of Total Dissolved Solids, Santa Monica Mountains Zone

determine the source of these toxic metals and to determine the relationship between fire and their occurrence in surface waters.

Another area of concern throughout the Santa Monica Mountains Zone is a serious and health threatening occurrence of high bacteriological contamination. Fecal coliform concentrations, which are sometimes associated with raw sewage in developed watersheds, exceeded public health standards for primary and secondary contact according to EPA criteria. The greatest concentration of coliforms monitored during the last three years reached 60,000 fecal coliform per 100 ml of water sampled. The mean (5920 fecal coliform/100 ml) concentration also exceeded the public safety limits. The EPA criteria specifies that surface waters with fecal coliform levels exceeding 200/100ml are a potential public health threat and are unsafe for body contact. On Federal property, stream courses in violation of EPA's criteria for fecal coliform were posted with a public health notice.

Pesticides were also detected in the bottom materials of stream courses sampled by the water quality program. Most of these chemicals have been canceled by the EPA including; aldrin, lindane, chlordane, DDT (and the associated DDE, DDD), dieldrin, endrin, toxaphene, heptachlor, and mirex. Other pesticides of note include the occurrence of PCB (use eliminated by EPA) and parathion (registration of usage required by the EPA).

WATER QUANTITY:

The basis for analyzing the water resources for the Santa Monica Mountains is the hydrologic cycle (Figure 6). The cycle accounts for water inputs, outputs, and storage coefficients. These components assist with the overall understanding of how the water system functions and are of significance toward formulating resource management policy toward maintaining ecosystem stability.

Currently, comprehensive hydrologic data are not available to develop the hydrologic budget for the Santa Monica Mountains. A hypothetical budget for the mountains can be expressed as:

$$SMMHB = [R+I] - [Q+i+E+T]$$

where,

Inputs: R=rainfall
I=imported domestic water supplies

Outputs: Q=surface runoff
i=infiltration
E=evaporation
T=transpiration

SMMHB: Santa Monica Mountains Hydrologic Budget

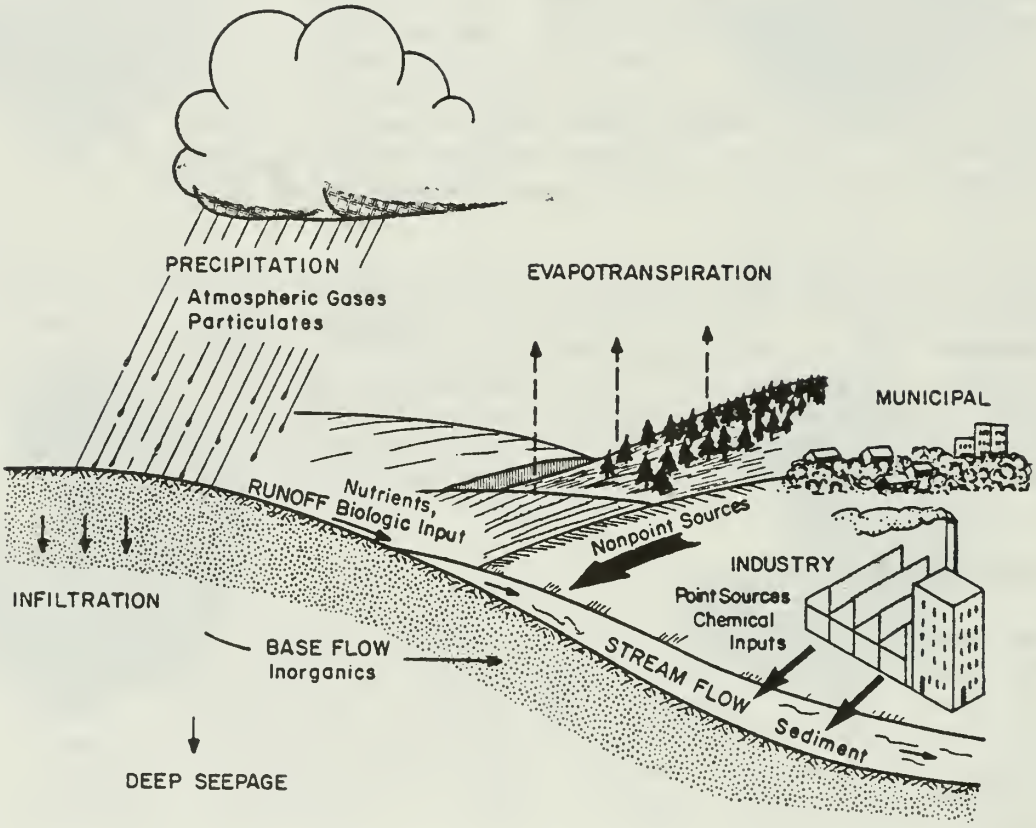

FIGURE 6: Conceptual Watershed and Hydrologic Cycle (USNPS, WRFSL Report No. 82-2)

Precipitation is the driving mechanism for the hydrologic cycle. The spatial distribution of rainfall within southern California is influenced by the Santa Monica Mountains (Figure 7). The proximity of the mountains to the Pacific Ocean, combined with their steep physical relief and general north-south trending canyons, causes micro-climatic changes in rainfall patterns. Precipitation is greater in the mountains, normally ranging from 18 to 28 inches per year. Originating land and sea patterns are a common occurrence and coastal fog a frequent invader deep within the mountain canyons.

There are four long-term NOAA (National Oceanic and Atmospheric Administration) weather stations within the Santa Monica Mountains Zone. These stations are located at the Santa Monica Pier, Topanga Canyon, Bel Air, and Lachusa Point. The period of record for these stations dates back to 1950 (except for Lachusa Point which began monitoring rainfall events in 1955).

Comparing the mean annual inputs of precipitation at each of these stations contrasts the spatial variability of rainfall within the mountains (Figure 8). Topanga Canyon, a major watershed in the Santa Monica Mountains, received 33 percent of the accumulated mean rainfall on an annual basis (monitoring site at 745 feet above sea level). Conversely, the Santa Monica Pier, situated at sea level, received the smallest amount of rainfall annually with only 17 percent of the accumulated four station mean. Lachusa Point, located at 1600 feet above mean sea level, reported 27 percent of the rainfall monitored and Bel Air at 540 feet (msl) received 23 percent of the annual precipitation.

Precipitation means and extremes were determined for each of these four NOAA weather stations (Tables 9, 10, 11, and 12). The greatest maximum rainfall recorded within the mountains for a water year (October previous year to September referenced year) occurred in Topanga Canyon during Water Year-78. A total of 55.40 inches of rain fell during that water year. Conversely, the least mount of precipitation was recorded at the Santa Monica Pier during Water Year-59 when only 5.66 inches of rain was monitored.

On a monthly basis, the greatest rainfall recorded was 31.62 inches which fell in Topanga Canyon during January, Water Year-69 (Figures 9, 10, 11, and 12). All stations reported a monthly minimum input of 0.00 inches during at least one month per water year for the period of record. However, two stations, Topanga Canyon and Lachusa Point, have always had recorded rainfall during the month of December.

Rainfall contributions serve as the only natural fresh water input into the hydrologic budget in the Santa Monica Mountains. Rain percolates into the ground to recharge

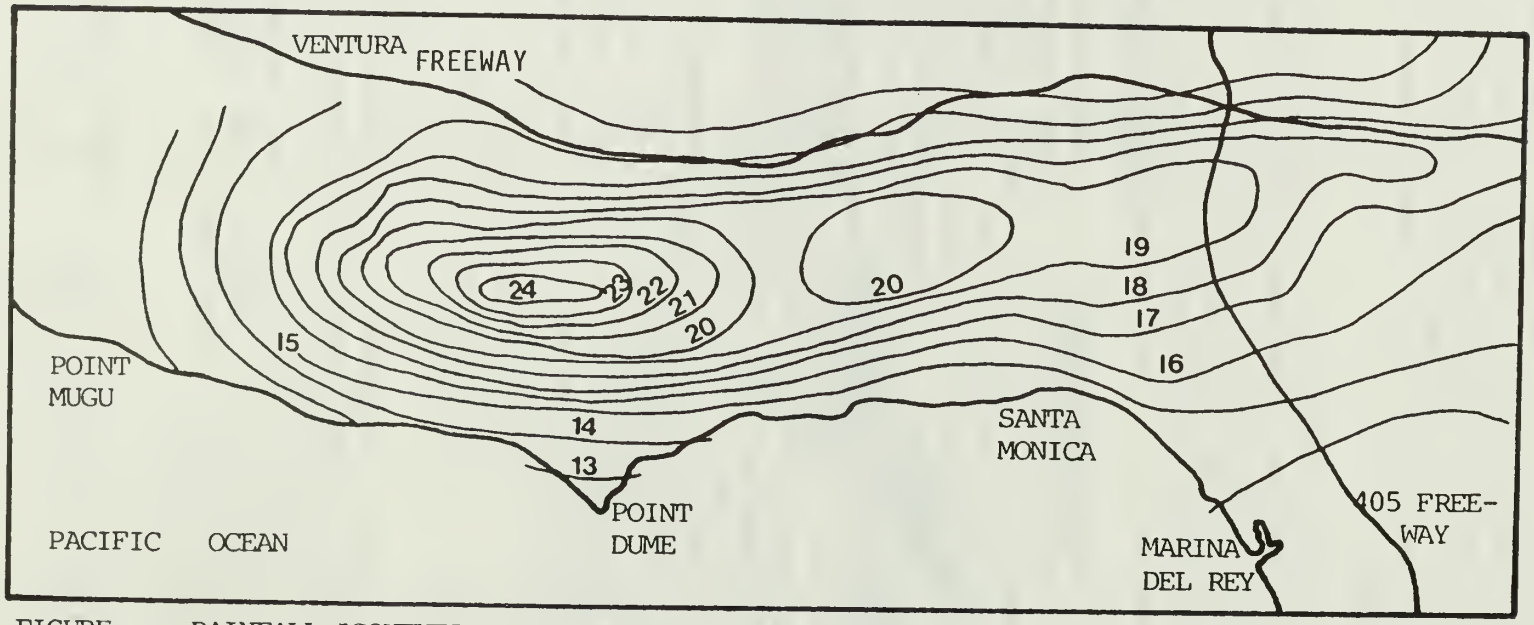

FIGURE 7: RAINFALL ISOHEYTS, SANTA MONICA MOUNTAINS AND VICINITY (Environmental Protection Agency, 1977). (Contours at one inch intervals)

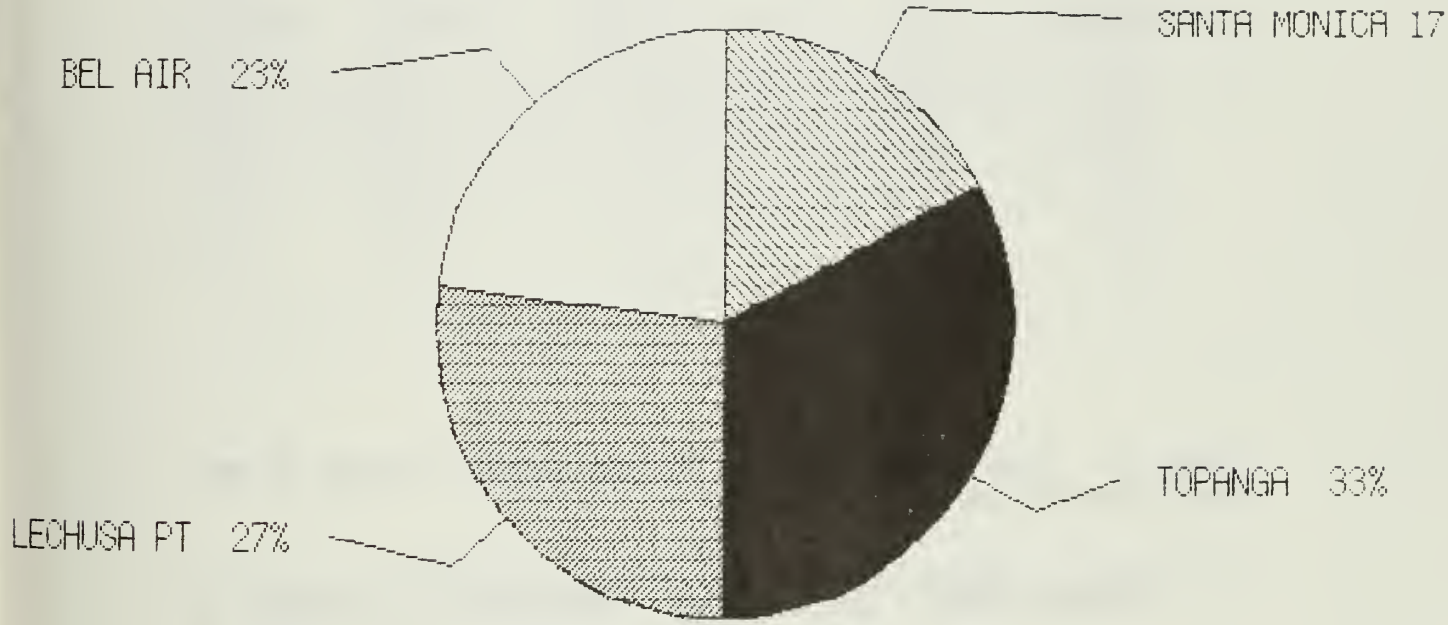

FIGURE 8: PERCENT OF ANNUAL MEAN ACCUMULATED RAINFALL AT FOUR LONG TERM WEATHER STATION MONITORING SITES (ACCUMULATED RAIN TOTAL: 81.53 INCHES FOR THE MEAN).

TABLE 9. MEAN RAINFALL, BY STATION, INCLUDING MAXIMUM AND MINIMUM YEARLY AND MONTHLY EXTREMES

STATION:	MEAN	MAX YEAR	MIN YEAR	MAX MONTH	MIN MONTH
TOPANGA CANYON	26.92	55.40	8.96	31.62	0.00
SANTA MONICA	13.60	33.05	5.66	14.11	0.00
BEL AIR	19.01	44.40	6.90	20.34	0.00
LACHUSA POINT	22.00	42.91	8.58	23.07	0.00

TABLE 10. MEAN MONTHLY RAINFALL FOR THE PERIOD OF RECORD IN THE STANTA MONICA MOUNTAINS BY STATION.

	TOPANGA CANYON	LACHUSA POINT	SANTA MONICA	BEL AIR
OCT	0.30	0.26	0.16	0.28
NOV	3.08	3.07	1.80	2.29
DEC	3.36	3.09	1.88	2.50
JAN	7.75	5.49	3.47	5.09
FEB	4.95	4.64	2.55	3.84
MAR	3.69	2.95	1.97	2.83
APR	2.02	1.66	1.00	1.36
MAY	0.35	0.34	0.14	0.25
JUN	0.02	0.07	0.01	0.04
JUL	0.05	0.01	0.03	0.01
AUG	0.12	0.09	0.15	0.15
SEP	0.22	0.31	0.14	0.18

TABLE 11. MAXIMUM MONTHLY RAINFALL MONITORED DURING THE PERIOD OF RECORD IN THE SANTA MONICA MOUNTAINS BY STATION.

	TOPANGA CANYON	LACHUSA POINT	SANTA MONICA	BEL AIR
OCT	1.27	1.20	1.75	1.43
NOV	18.62	16.98	8.68	11.94
DEC	10.70	9.37	6.46	8.11
JAN	31.62	23.07	13.89	20.34
FEB	25.69	21.71	14.11	19.20
MAR	17.60	11.50	9.85	14.70
APR	8.15	7.00	5.52	6.06
MAY	3.30	2.33	2.88	4.50
JUN	0.29	0.99	0.20	0.49
JUL	0.50	0.13	0.39	0.40
AUG	2.60	1.46	3.14	3.50
SEP	3.20	3.96	1.06	2.60

TABLE 12. MINIMUM MONTHLY RAINFALL FOR THE PERIOD OF RECORD IN THE SANTA MONICA MOUNTAINS BY STATION.

	TOPANGA CANYON	LACHUSA POINT	SANTA MONICA	BEL AIR
OCT	0.00	0.00	0.00	0.00
NOV	0.00	0.00	0.00	0.00
DEC	0.01	0.09	0.00	0.00
JAN	0.00	0.00	0.00	0.00
FEB	0.00	0.00	0.00	0.00
MAR	0.00	0.00	0.00	0.00
APR	0.00	0.00	0.00	0.00
MAY	0.00	0.00	0.00	0.00
JUN	0.00	0.00	0.00	0.00
JUL	0.00	0.00	0.00	0.00
AUG	0.00	0.00	0.00	0.00
SEP	0.00	0.00	0.00	0.00

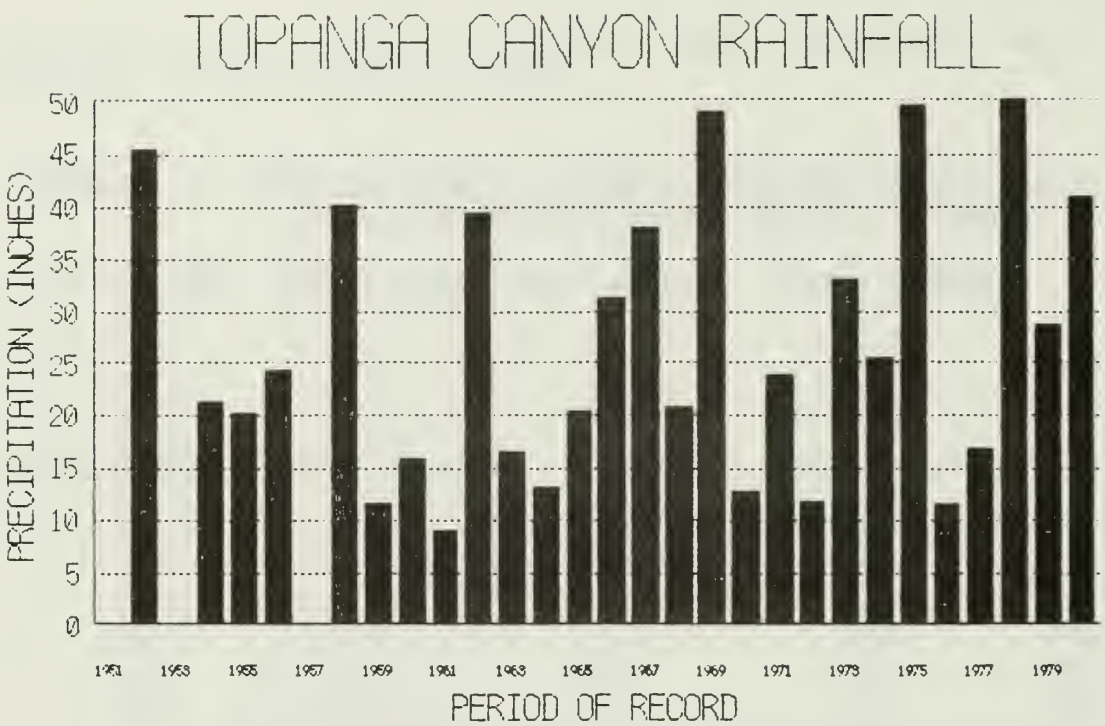

FIGURE 9: Topanga Rainfall, Yearly Totals Period of Record

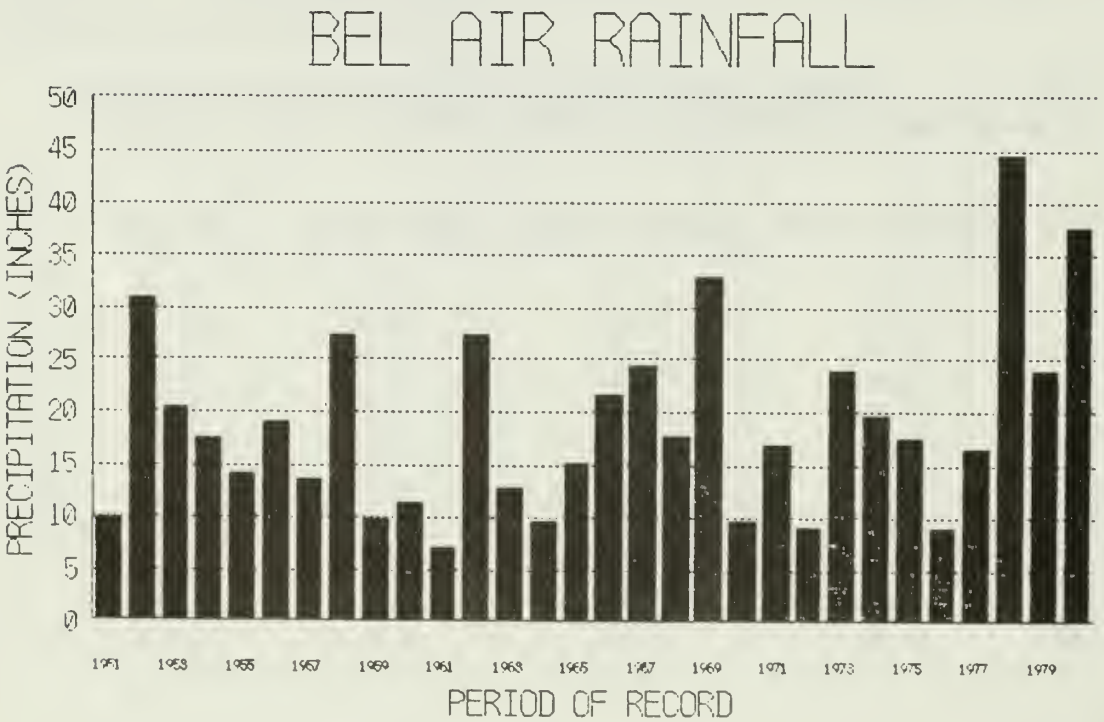

FIGURE 10: Bel Air Rainfall, Yearly Totals Period of Record

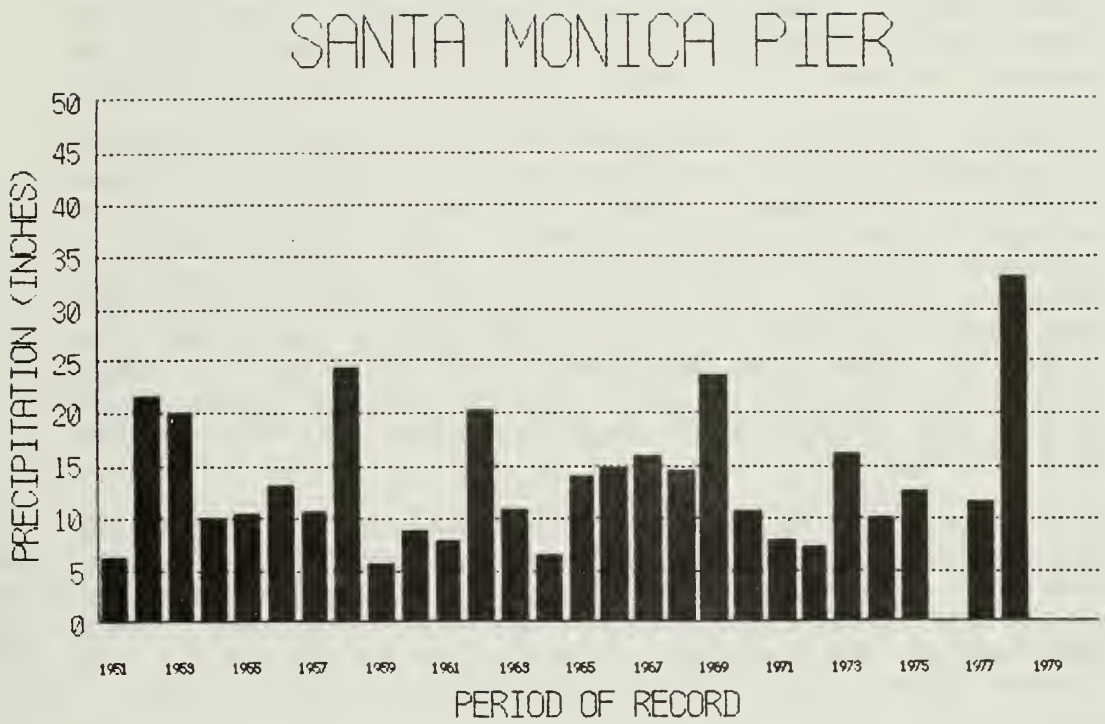

FIGURE 11: Santa Monica Pier Rainfall, Yearly Totals Period of Record

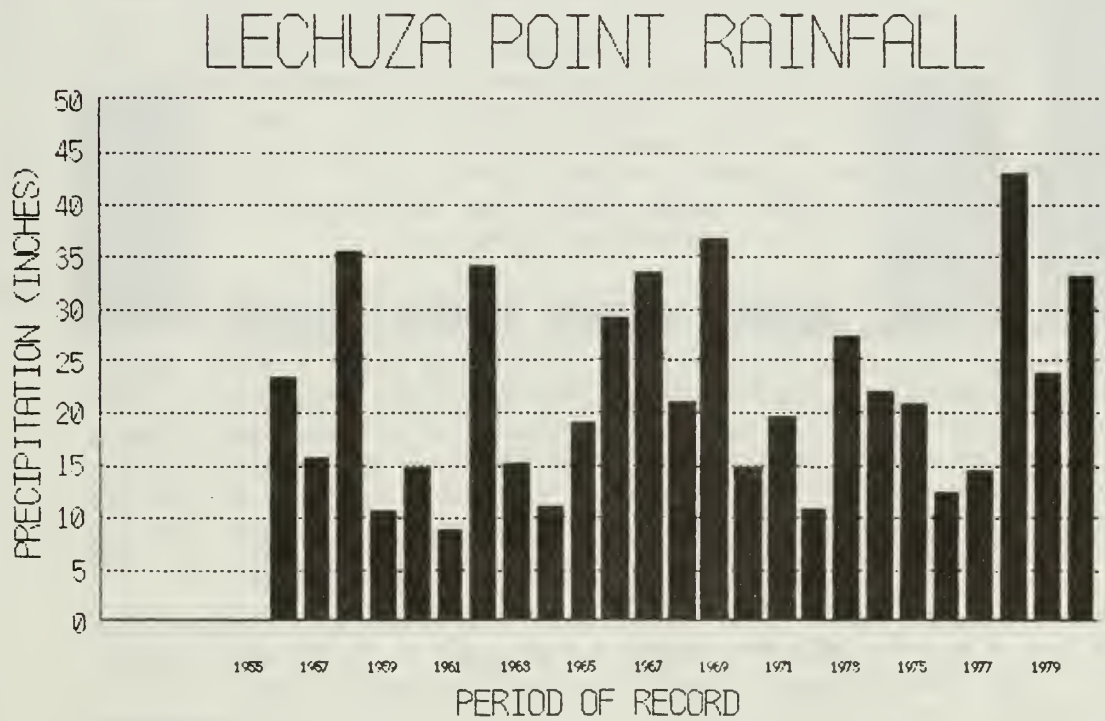

FIGURE 12: Lechuza Point Rainfall, Yearly Totals Period of Record

ground water supplies or is transported by overland flow into the stream channel (small amounts are evaporated). The rate of stream flow, or discharge, can be monitored and these data are an integral component in the output aspect of the hydrologic budget.

Discharge data for the watersheds in the Santa Monica Mountains are extremely limited. Long term monitoring stations are located in Malibu and Topanga Creeks' in Los Angeles County and Calleguas Creek in Ventura County. The stations were a cooperative effort by the Flood Control Districts' and the U.S. Geological Survey. This cooperative effort between Los Angeles County and the USGS was discontinued after Water Year-78 and the county has since then maintained and collected data at these sites. The cooperative effort between Ventura County Flood Control and the USGS at Calleguas Creek has continued through Water Year-84.

Since Water Year-82 the National Park Service, in cooperation with the USGS, implemented a discharge monitoring program for the mountains. Five sites were selected for discharge monitoring due to their watershed characteristics and their importance toward understanding the hydrology. These sites are located in Big Sycamore Canyon, Arroyo Sequit, Zuma, Triunfo, and Cold Creek.

Crest-stage gauges were installed at each of these sites for discharge and peak flow monitoring. The crest gauge is important for recording peak flow levels for discharge events. Data obtained from these devices provide information on flood frequency and basin flow characteristics. Staff gauges were also installed at each discharge monitoring site. These gauges provide a means where discharge rates can be equated with water level heights in the creek. Eventually, stage-discharge curves will be formulated after sufficient data have been collected at these sites. The USGS standards specify that data must be collected for at least 10 years before an accurate rating curve can be developed. These rating curves equate stage height monitored at a staff guage with the associated discharge determined from previous monitoring routines.

Based upon only one year's monitoring some initial peak flows have been estimated by the USGS from indirect measurement. Peak discharge rates are similar for Cold Creek (1030 cfs), Arroyo Sequit (1540 cfs), Big Sycamore (1300 cfs), and Zuma Canyon (1470 cfs) (Figure 13). Based on this initial and provisional determination, it appears as if each of these basins have similar flow characteristics subsequent to rainfall events. A greater data base is required before definitive statements can be formulated.

The greatest peak flow estimated from current information collected by the USGS/NPS discharge program is in Triunfo Canyon. The USGS provisional data indicate that peak flows reach a discharge rate of 11,750 cfs. This compares with the documented peak flow in Topanga Canyon at 12,200 cfs and both of these rates

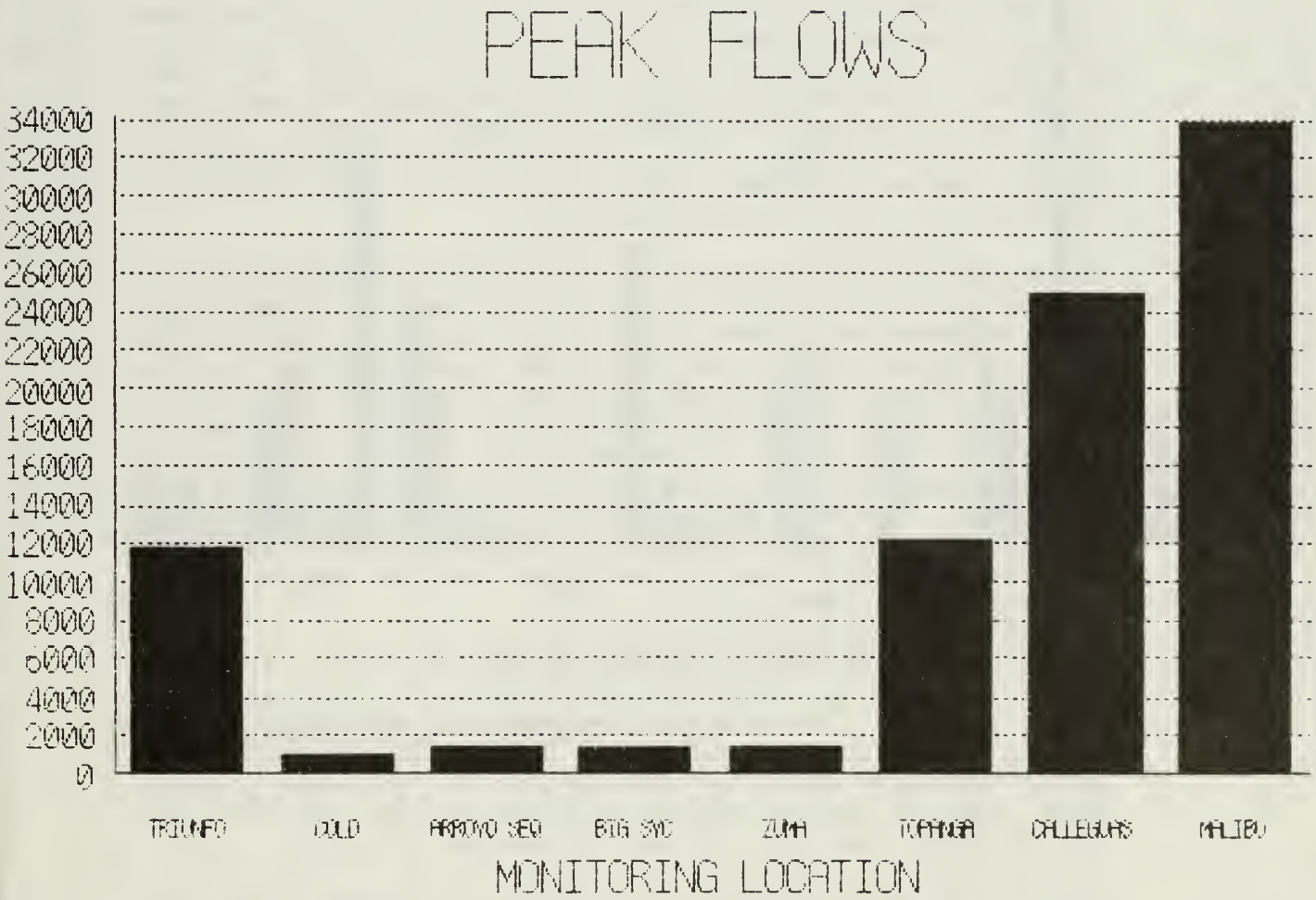

FIGURE 13: PEAK FLOWS MONITORED IN THE SANTA MONICA MOUNTAINS AT SELECTED WATERSHEDS.

are approximately one third of the greatest flow in the mountains which occurs in Malibu Canyon, the largest watershed in the Santa Monica's. The peak flow monitored during the period of record for Malibu Creek is 33,800 cfs. Another major creek in the mountains is Calleguas Creek which also experiences high discharge rates. According to the USGS data (Water Year-60 to Water Year-78) documented peak flow rates were 18,700 cfs. However, it has been estimated that the stream could equate 25,000 cfs during a major storm.

Discharge measurements have been conducted in Malibu Creek for the longest period of record within the Santa Monica Mountains (Figure 14 and Table 13). Discontinuous data were collected in the watershed from January, 1903 to December, 1907. A continuous discharge monitoring program began in February, 1931 and continued at least until the end of Water Year-78. The mean daily discharge for Malibu Creek is 23 cfs or 16,660 acre-feet per year. The maximum daily discharge is 33,800 cfs which occurred on January 25, 1969. No flow conditions have been monitored in the months of October, November, December, January, June, July, and August. The last month that no flow occurred in Malibu Creek was November, 1951. Prior to this time, no flow conditions were not a common occurrence.

The second longest period of record for discharge measurements is in Topanga Canyon. Continuous monitoring began in January, 1930 and continued until Water Year-78 as a cooperative USGS/LACFCD effort. Since WY-78, the station has been operated by the county. The maximum discharge monitored in Topanga Canyon during this period of record was 12,200 cfs which also occurred on January 25, 1969 (Figure 15 and Table 14). Precipitation records for the canyon indicate that a total of 31.62 inches of rain fell that month. The mean daily discharge is 5.98 cfs or 4,300 acre-feet per year. No flow has occurred during the months of September and November and the only year that this was monitored was during Water Year-36.

Calleguas Creek is the only other watershed which has a long-term period of record. Continuous data have been collected since Water Year-68. The monitoring program was a cooperative effort between Ventura County Flood Control District and the USGS. The park's period of record for this station is continuous through Water Year-78 and the cooperative effort between the USGS and Ventura County has been continued through Water Year-84.

During the park's period of record for Calleguas Creek the maximum discharge rate was 18,700 cfs, or 21,450 acre-feet per year. (Figure 16 and Table 15). USGS records indicate that sustained flow is from the City of Thousand Oaks reclamation plant and that pumping for irrigation occurs one mile above the monitoring station. No flow conditions have occurred during the months of May, June, July, August, and September. The last no flow condition occurred in August of Water Year-72.

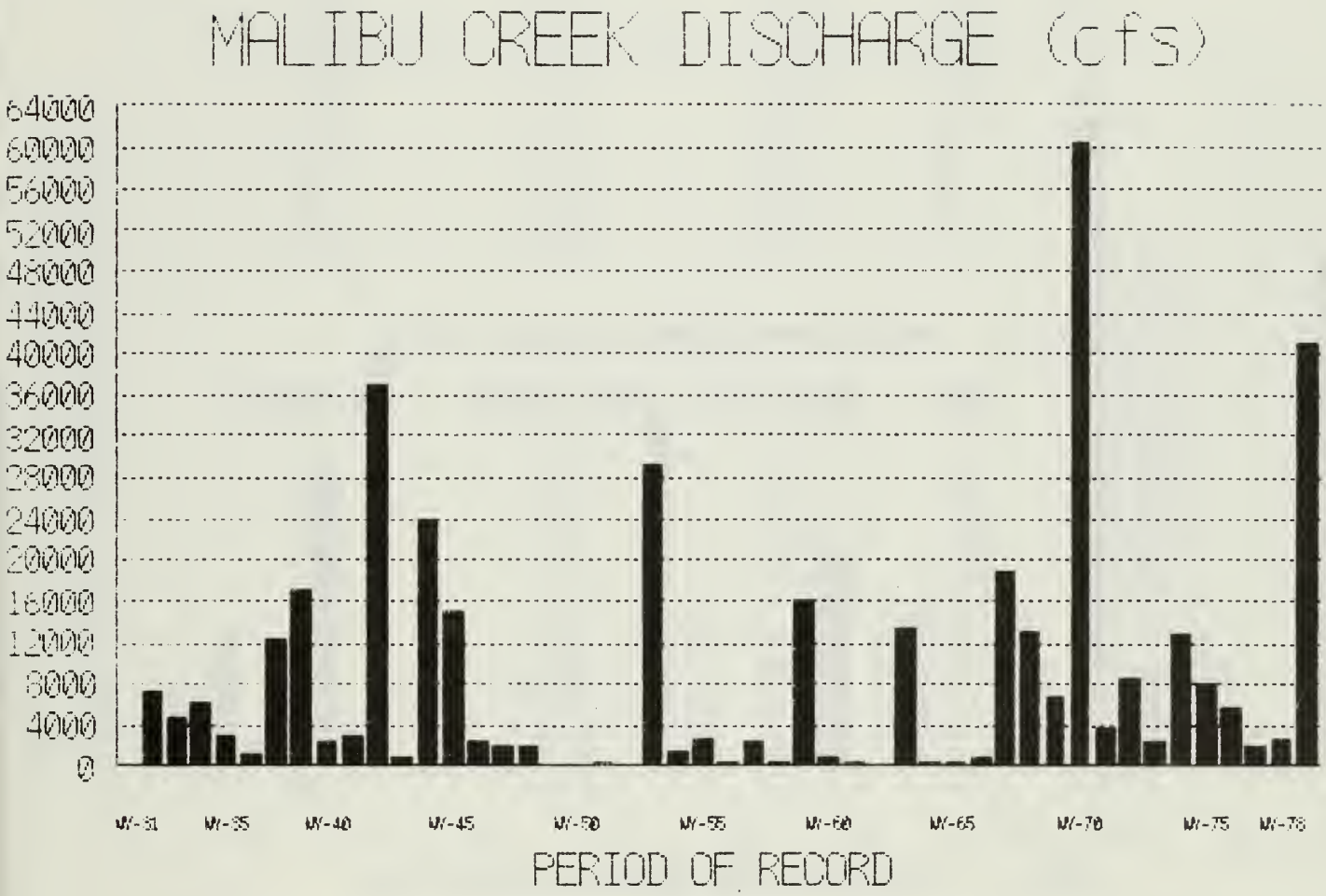

FIGURE 14: MALIBU CREEK DISCHARGE (cfs).

TABLE 13. MALIBU CREEK MONTHLY DISCHARGE (cfs)

	MEAN	MEAN DAILY	MIN MONTHLY	MAX MONTHLY
OCT	30	0.96	0.00	147
NOV	263	8.77	0.00	5850
DEC	583	18.80	0.00	9052
JAN	2224	71.74	0.00	42224
FEB	1909	68.18	2.07	12544
MAR	2254	72.70	3.50	19127
APR	606	20.20	3.03	7200
MAY	160	5.16	3.29	1004
JUN	78	2.60	0.00	390
JUL	46	1.48	0.00	235
AUG	30	0.97	0.00	201
SEP	34	1.13	0.00	220

TABLE 14. TOPANGA CREEK MONTHLY DISCHARGE (cfs)

	MEAN	MEAN DAILY	MIN MONTHLY	MAX MONTHLY
OCT	14	0.47	0.00	496
NOV	68	2.27	0.09	1470
DEC	174	5.62	1.15	1600
JAN	581	18.75	2.79	8494
FEB	628	22.43	2.18	5264
MAR	506	16.32	1.86	5983
APR	231	7.68	0.81	4710
MAY	27	0.88	0.37	220
JUN	11	0.38	0.48	71
JUL	6	0.18	0.31	31
AUG	4	0.12	0.31	17
SEP	3	0.11	0.00	19

TABLE 15. CALLEGUAS CREEK MONTHLY DISCHARGE (cfs)

	MEAN	MEAN DAILY	MIN MONTHLY	MAX MONTHLY
OCT	211	6.81	56.71	367
NOV	604	20.12	78.30	3575
DEC	998	32.19	87.90	4226
JAN	2650	85.47	122.00	14314
FEB	3013	107.59	157.00	12018
MAR	2067	66.66	191.40	14604
APR	331	11.04	103.60	1156
MAY	246	7.93	56.74	654
JUN	148	4.95	35.86	439
JUL	126	4.07	14.58	467
AUG	161	5.21	2.79	442
SEP	239	7.97	32.17	791

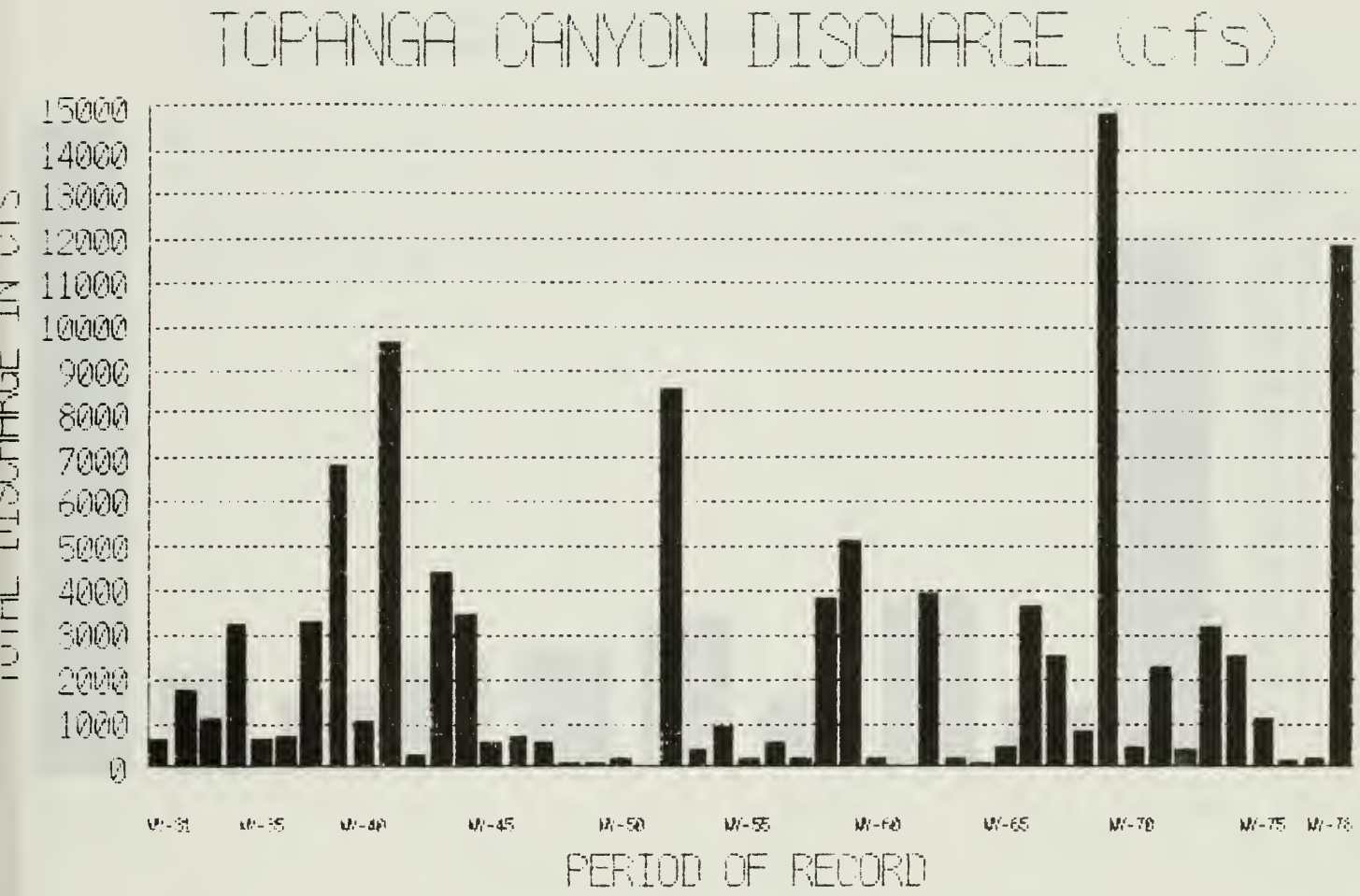

FIGURE 15: TOPANGA CANYON DISCHARGE (cfs).

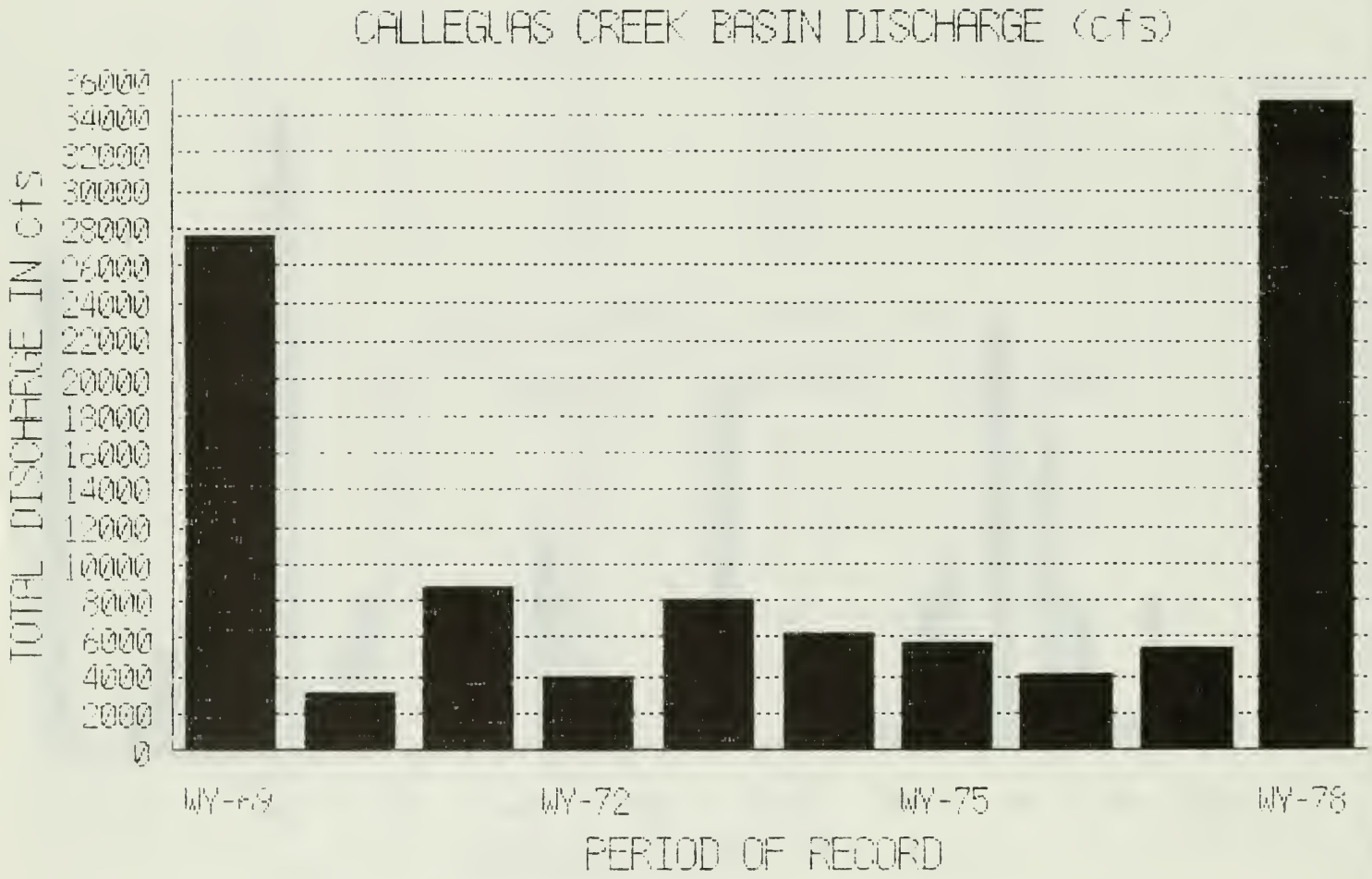

FIGURE 16: CALLEGUAS CREEK BASIN DISCHARGE (cfs).

WATER RIGHTS:

Due to the legal complexities involved with water rights, a complete analysis of these issues in the Santa Monica Mountains will be developed at a later time. The park will request assistance from the Western Region and the Water Resources Division to finalize this section of the Water Resource Management Plan. A water rights project addressing this issue is contained in this plan for future implementation.

Currently, water rights within the national recreation area have been acquired from the owners of record for properties acquired by the NPS. However, the NPS has not acquired existing water rights owned by third parties within the mountains. The Superintendent maintains a record of water rights acquired by the NPS and those rights maintained by third party owners within the NRA.

project statements

WATER RESOURCE PROJECTS

PROJECT NUMBER	PROJECT TITLE	STATUS	PAGE
WR-1	Monitor Water Resources (Quality)	Initiated	58
WR-2	Monitor Water Resources (Quantity)	Initiated	62
WR-3	Monitor Acid Rain	Proposed	65
WR-4	Monitor Medea Creek to Determine Coliform Source	Proposed	70
WR-5	Monitor Stream Productivity	Proposed	72
WR-6	Monitor Toxic Metals and Determine Source	Proposed	75
WR-7	Determine Rainfall	Proposed	78
WR-8	Analyze Urban Hydrologic Impacts	Proposed	81
WR-9	Continue Cooperative Water Resource Management	Initiated	84
WR-10	Analyze Water Rights	Proposed	87
WR-11	Continue Stream Rehabilitation	Initiated	89

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-3 -- MONITOR WATER RESOURCES (QUALITY)

Water Resource Management Number: WR-1
Park Priority: 7
Status: Initiated

2. STATEMENT OF PROBLEM

Santa Monica Mountains National Recreation Area was established to protect the area's natural and cultural resources. The mountains have historically functioned as a natural area forming a barrier to westward expansion of the Los Angeles urban complex. However, during recent time, the Santa Monica's have become an attractive location for both residential and commercial development. Of critical importance to a comprehensive approach to resource preservation is the impact this development is having on the water resources in the mountains, especially water quality.

Urbanization, slope stabilization, and stream channelization have increased the sediment load, inorganic constituents, heavy metals, organic materials (including pesticides), and bacteriological contaminants in the surface waters. Extremely high nutrient content and bacterial counts have been monitored within the Santa Monica Mountains throughout the past several years. During the winter of 1982-83, "alert" levels of trace metals exceeding EPA's Federal water quality criteria were detected in one of canyons during routine water quality monitoring.

Baseline water quality data are essential in order to provide both resource management and park management with the information required to protect and preserve the recreation area's natural resources as mandated by Congress (P.L. 95-625). The program must acquire data for major watershed units within the NRA while maintaining it's flexibility to concentrate on specific watersheds and stream courses when critical water quality problems are detected. Data acquired will be utilized to ensure that the park's waters are of sufficient quality to protect the ecosystem and the millions of visitors who recreate in the Santa Monica Mountains and coastal area.

If the National Park Service is to fulfill its Congressional mandate, then comprehensive and accurate hydrologic records are required to document impacts, identify point sources of pollutants, formulate trend analysis, and implement an effective water management program for the Santa Monica Mountains. In addition to Public Law 95-625, the NPS is required by the Federal Water Pollution Act Amendments of 1972 I(P.L. 92-506) and the Clean Water Act of 1977 (P.L. 95-217) to comply with established Federal, State, local and interstate water quality standards. Other Federal laws and

Executive Orders which require water related data for effective compliance include the Organic Act 1916, NEPA 1969, Endangered Species Act of 1973, Coastal Zone Management Act of 1972, Executive Orders 11988 and 11990 (Floodplain Management and Protection of Wetlands), and the EPA/NPS Memorandum of Understanding for Water Resources.

3. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Establish an NPS Water Quality Monitoring Program

The National Park Service (SAMO) would implement a comprehensive water quality monitoring program. The program would obtain data for the organics, inorganics, trace metals, and pesticides. Continuous monitoring devices would be installed at strategic locations to monitor pH, dissolved oxygen, and specific conductance (DO). Data analyses would be conducted under contract with appropriate local laboratories.

This alternative would require additional staffing and funding. The analyses of water quality samples requires consistency in sample processing. The degree of variance in sample processing procedures employed by various contractors, and their degree of sophistication, would not enable a consistent data base to be developed nor quality control required for a long-term water quality program.

B. No Action

This alternative would eliminate all interest and monitoring activities for water quality parameters in the Santa Monica Mountains by the National Park Service.

The "no action" alternative cannot be considered as an alternative because in doing so the NPS would be failing to fulfill the Congressional mandate (P.L. 95-625) to preserve the natural and cultural resources of the Santa Monica Mountains and provide for recreational opportunities in a healthful setting.

C. Continue Present Status

Water quality monitoring programs within the Santa Monica Mountains are limited in nature and funding. Los Angeles County monitors the water quality in Topanga and Malibu Creeks at infrequent intervals. The county also monitors coliform (total, most probable number technique) concentrations at selected sites In addition, Las Virgenes Municipal Water District monitors water quality parameters within the Malibu watershed.

During the past two fiscal years (FY-82 and FY-83) a

cooperative water quality monitoring program between the U.S. Geological Survey, NPS Western Regional Office, and NPS- Santa Monica Mountains N.R.A. has been undertaken. Water quality data have been acquired during both wet and dry seasons at selected sites representative of developed, undeveloped, and intermediately developed areas within the 225,000 acre Santa Monica Mountain zone. This monitoring program will assist the NPS with establishing baseline water quality parameters for the mountains. Both physical and biological parameters are monitored and analysis of samples collected done by the USGS at their national water quality lab. The funds for this program will be discontinued by the Water Resources Division after FY-84 and an increase in base funding for the park is required to continue this program in future fiscal years.

1. RECOMMENDED COURSE OF ACTION

A. Cooperative Water Quality Monitoring Program

The NPS would continue with a cooperative multijurisdictional water quality monitoring program for the Santa Monica Mountains. The park will cooperate with State, County and local agencies collecting water quality data within the mountains. This will include (but not limited to) the Los Angeles Regional Water Quality Board, the Ventura County Regional Water Quality Board, the Ventura County Flood Control District, the Los Angeles County Flood Control District, the Las Virgenes Municipal Water District and the State of California Department of Parks and Recreation.

The cooperative USGS and NPS water quality program will continue with funds provided by an increase in base funding for the park. This program has been instrumental in providing the NPS with a basic understanding of the the variance in water quality parameters in the watersheds monitored. However, this program has been underway only two years and sufficient data have not been collected to make definitive statements regarding the quality of waters in these streams.

The objectives of the USGS/NPS cooperative program are to acquire baseline water quality data for representative areas in the Santa Monica Mountains. The monitoring network will be designed to interface with existing monitoring networks in the mountains. Data collected will provide information on the temporal and spatial quality of surface waters in the national recreation area. Ultimately, these data will be used to evaluate long-term water quality changes throughout the park, assess the impacts to the ecosystem from changes

monitored, and to develop water quality criteria for the mountains.

B. Monitoring Actions

The cooperative USGS/NPS water quality monitoring program for the Santa Monica Mountains will continue to concentrate on the acqusition of baseline data. Monitoring stations will be selected within each watershed, depending on natural resource management objectives. Monitoring locations will be readily changed to other watersheds when critical problems develop (e.g., EPA alert concentrations of water quality parameters are reached). Water samples collected by the USGS will be analyzed to determine the concentrations of the inorganics, organics, trace metals, pesticides, temperature, pH, specific conductance, dissolved oxygen, transparency, and bacteriological contamination. Sampling will be done at least twice each year and preferably three times each year to document surface water conditions during high, intermediate, and low flow regimes. This includes at least one sample at each monitoring site during both the dry and wet seasons. Data collected will be incorporated within the National Stream Quality Accounting Network (NASQAN), the USGS national water quality data bank (WATSTORE), and the park's resource management data base.

C. Personnel Requirements

Natural Resource Management Specialist (0.15 FTE, currently funded in park base).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	4200	4350	4500	4650	4800
USGS Contract	26600	29300	32100	35000	38200
TOTAL:	30800	33650	36600	39650	43000
Funds Available in Park Base	4200	4350	4500	4650	4800
Funds Requested from Region	26600	29300	32100	35000	38200

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-2 -- MONITOR WATER RESOURCES (WATER QUANTITY)

Water Resource Management Number: WR-2
Park Priority: 7
Status: Initiated

2. STATEMENT OF PROBLEM

The Santa Monica Mountains National Recreation Area encompasses 150,000 acres in Los Angeles and Ventura Counties. The natural resources of the park are dependent upon hydrologic inputs for ecosystem functions and stability. These inputs recharge ground water supplies and contribute fresh waters to the stream channels. The streams are, in most part, intermittent flowing mainly during the winter months subsequent to rainfall events. Perennial streams, even though limited, do exist in some of the major watersheds including Malibu, Topanga, and Zuma.

The accelerating rate of development on the floodplains and stream channels in the Santa Monica Mountains has impacted the hydrologic regime. Discharge rates and quantities have been altered due to stream channelization and infiltration losses associated with urbanization. Hydrologic records are necessary if the impacts to the ecosystem are to be assessed and recommendations made to mitigate changes in flow.

Presently, minimal hydrologic data and monitoring stations exist within the national recreation area. Long term discharge stations have been established by Los Angeles County and the U.S. Geological Survey in Malibu and Topanga basins. In addition, a cooperative effort between the U.S Geological Survey, California Department of Parks and Recreation, NPS Western Regional Office and the Santa Monica Mountains N.R.A. has established peak flow/discharge stations (discontinuous monitoring) in Big Sycamore, Zuma, Triunfo, Cold Creek, and Arroyo Sequit during FY-83. Future monitoring at these stations will provide data essential to develop stage/discharge relationships for flow analysis. All other watersheds in the Santa Monica Mountains have insufficient record from which sound decisions can be made regarding flow regimes and hydrologic trends for resource preservation.

The National Park Service is required by the enabling legislation (P.L. 95-625) to manage the National Recreation Area in a manner which will preserve and enhance its natural resources. Comprehensive, accurate, and representative hydrologic records are essential to document impacts on the hydrologic regime for each watershed and to analyze the associated impacts to the ecosystem from internal and external threats. In addition to the Congressional mandate directing the National Park Service to manage the natural

resources of the Santa Monica Mountains other Federal laws also apply, including the Organic Act of 1916, N.E.P.A. in 1969, the Endangered Species Act of 1973, Coastal Zone Management Act of 1972, Executive Orders 11988 and 11990 (Floodplain Management and Protection of Wetlands), and the EPA/NPS Memorandum of Understanding for Water Resources.

3. ALTERNATIVE ACTIONS and THEIR PROBABLE IMPACTS

A. Develop Discharge Monitoring Program

The National Park Service would develop a network of continuous stream gauging stations in all major streams within the Santa Monica Mountains. Currently, this option is not ideal due to insufficient hydrologic data for all major water courses in the Santa Monica's. Implementation of this alternative could result in placement of equipment in areas not ideal for hydrologic examination and/or in areas where collection of these data would not be necessary.

B. No Action

This alternative would eliminate all interest and activities in water resource management for the Santa Monica Mountains by the National Park Service. The "no action" strategy cannot be considered as an alternative because in doing so the National Park Service would be failing to fulfill the Congressional mandate to preserve the natural resources of the Santa Monica Mountains.

C. Continue Present Status

Currently Los Angeles County monitors discharge in Malibu and Topanga Creeks on a continuous basis. The U.S. Geological Survey and NPS have established peak flow devices and staff gauges in Zuma, Triunfo, Cold Creek, Arroyo Sequit, and Big Sycamore. Even though these stations have been installed, limited data have been collected at these locations. During FY-84 an intensive effort will be made by the NPS and USGS to monitor flow conditions at these sites. However, funding for the program by the Western Region's (NPS) Water Resources Division will discontinue at the end of the fiscal year. An increase in base funding for the park is required to continue this program in future fiscal years.

When funds become available, the NPS will gauge the streams on a frequent interval reporting discharge data to the USGS. These data will then be analyzed and stage discharge ratings formulated for the streams monitored. When sufficient data have been collected for a particular stream, monitoring at that site will be discontinued and another stream will be identified for

monitoring. Eventually, all major stream courses will have sufficient data, representative of all flow conditions, to generate stage/discharge relationships and to analyze peak flow conditions.

4. RECOMMENDED COURSE OF ACTION

A. Monitor Water Resources (Quantity)

The National Park Service will continue it's cooperative water quantity monitoring program with the U.S. Geological Survey for the acquisition of baseline hydrologic discharge data. Data will continue to be collected at the sites where stage/discharge and peak flow devices were installed in FY-83. After sufficient data have been collected (USGS standards specify at least 10 years record), the current sites will be discontinued and alternative locations chosen as new monitoring sites. This procedure will enable stage/discharge curves to be generated for most of the major streams and their segments throughout the Santa Monica Mountains. The monitoring network will provide representative data sets for each watershed and data suitable for application to the overall resource management program. Data will be stored in both hardcopy and automated data processing formate for application and analysis. In addition, these data will be published annually in the U.S. Geological Survey's publication, Water Resources Data for California.

B. Monitoring Actions

Stage/discharge and peak flow stations established during FY-83 will continue to be monitored on a frequent basis. These stations are located in Triunfo, Big Sycamore, Arroyo Sequit, Cold Creek, and Zuma Canyons. Discharge measurements will commence as a cooperative effort between the U.S. Geological Survey and the NPS after 1 inch of rainfall has been monitored at each of these sites: Rancho Sierra Vista, Diamond X Ranch, Cold Creek Preserve, and Park Headquarters. In addition, the NPS will make discharge measurements on a regular basis, to provide data sets which will fine tune the rating curve. The NPS will furnish these data to the USGS for their application to the development of a stage discharge curve. Peak flow data will also be collected at these sites subsequent to major storm events.

C. Personnel Requirements

Natural Resource Management Specialist (0.15 FTE, currently funded in park base) and one park technician, 130 work days (0.5 FTE).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	10900	11400	11900	12500	13000
USGS Contract	6000	7000	8000	9000	10000
Equipment	3000	3200	3400	3600	3900
TOTAL:	19900	21700	23800	26300	28900
Funds Park Base	4200	4400	4500	4700	4800
Funds from Region	15700	17300	19300	21600	24100

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-8 -- MONITOR ACID RAIN

Water Resource Management Number: WR-3
Park Priority: 21
Status: Proposed

2. STATEMENT OF PROBLEM

The largest of the coastal Mediterranean type ecosystems preserved by the National Park Service is contained in the Santa Monica Mountains. Vegetation communities consisting of mixed chaparral, coastal sage, and oak woodlands are the primary cover types. Residing within these various plant communities and depending upon this ecosystem for their existence are numerous wildlife species. These natural resources could be threatened by continued air quality degradation within the Los Angeles Basin and Oxnard Plain. The combination of extensive mobile pollutants and air circulation patterns contribute to the poor air quality. Included within the overall degradation of air quality in the Santa Monica Mountains is the occurrence of acid deposition.

Acidic compounds occur as both wet and dry deposition. According to Smith (1980), "acid rain deposition results primarily from the combustion of fossil fuels which release sulfur dioxide (SO2) and nitrogen dioxides (NOx) in the form of nitric acid (NO) and nitrogen dioxide (NOx) to the atmosphere". The combination of these sulfates and nitrates with water molecules in the atmosphere produces acid rain. In California, the nitrate ion is responsible for most acid rain as over 65 percent of the total NOx is derived from mobile sources (State of California, 1981).

Dry deposition is the other major acidic depositional process. Fine particulates, including sulfate and nitrate ions, settle out of the atmosphere collecting on terrestrial objects. In past studies, little has been determined regarding the impact of the dry component of acid deposition on natural resources.

The pH levels for acid rainfall fluctuate both spatially and temporally throughout southern California. In a recent study completed by the State Air Resources Board (1981) acid rain was found to be, under certain atmospheric conditions, as acidic as that found anywhere else in the world. The analysis determined that both the source and receptor for these acid pollutants was in southern California with a dominance in nitric acid in the rainfall.

The acidity of normal background precipitation is 5.6 with a neutral pH at 7.0. Research completed by the California State Air Resources Board (1981) determined that rainfall in southern California had a much greater acidity than pH levels

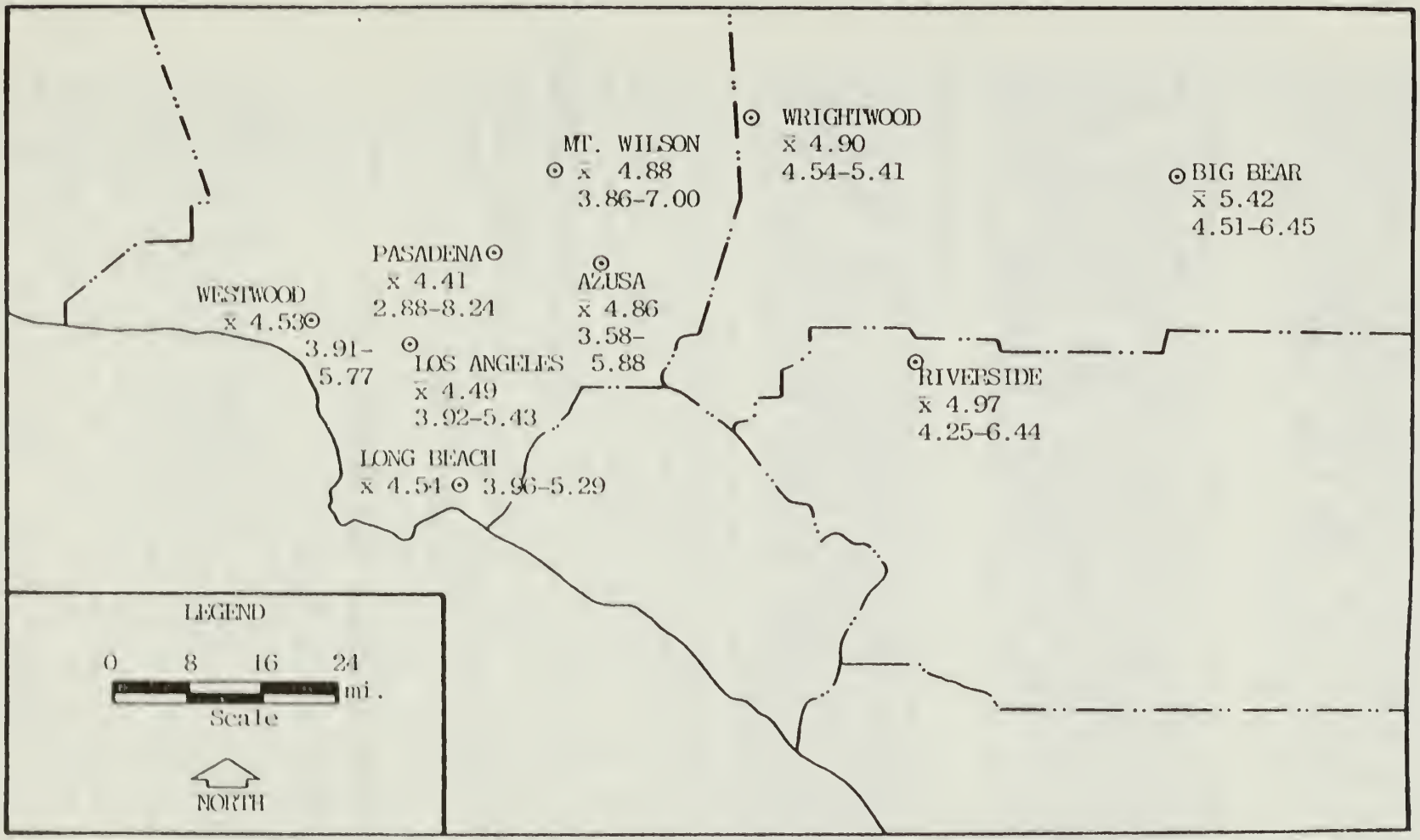

FIGURE 17 : MEAN pH and pH RANGE, LOS ANGELES BASIN, FALL 1978 - SPRING, 1979 (State of California, Air Resources Board)

associated with unpolluted rainfall (Figure 17). The report concluded that rainfall occurring in the Los Angeles Basin typically was 10 to 100 times more acidic than unpolluted rain. The least acidic mean rainfall monitored by this study in Los Angeles was at a pH of 4.41. Conversely, the highest acidity monitored was a pH of 2.89 (vinegar is slightly less acidic with a pH of 3.0).

Increasing acidity in rainfall has been demonstrated to adversely impact vegetation, wildlife, water and other natural resources. Both direct and indirect effects upon vegetation communities have been proven for plant receptors. Tam and Cowling (1977) classified these impacts as acute, chronic, and subtle. Many factors affect the response of the vegetation to acid precipitation inputs including damage to protective surface structures, disturbance in plant metabolism, altered leaf/root exudation, and overall plant health.

The California State Air Resources Board noted other impacts to the natural resources from acid rain. This includes the acidification of soils; alteration of the solubility, mobility, and toxicity of chemical species affecting biological processes; and impacts to wildlife populations, water supplies (both ground and surface), acquatic and coastal resources.

Public Law 95-625 directed the National Park Service to manage the Santa Monica Mountains in a manner "...which will preserve and enhance it's scenic, natural, and historic setting, and it's public health value as an airshed for the southern California metropolitan area". Other applicable Federal laws and Executive Orders which apply include the Clean Air Act, Organic Act of 1916, NEPA, National Historic Preservation Act, E.O. 11593 (Protection and Enhancement of the Cultural Environment), Clean Water Act, Endangered Species Act, and the Coastal Zone Management Act.

3. ALTERNATIVE ACTIONS and THEIR PROBABLE IMPACTS

A. Continue Present Status

Presently, limited data exist for the Santa Monica Mountains in regards to acid deposition. The California State Air Resources Board collects acid deposition data at several locations within the Los Angeles Basin. However, none of these monitoring locations are situated in the Santa Monica Mountains. The only acid rain study currently underway within the mountains is research conducted in Newton Canyon by Dr. Paul Miller in association with the U.S. Forest Service and the Man and the Biosphere program. The National Park Service supports all acid deposition research within the Santa Monica Mountains and the immediate vicinity. However,

this alternative does not provide for the acqusition of definitive resource information to determine the occurrence of acid deposition within the mountains, the associated acidic concentration of outfall, and the impact this deposition has upon the Mediterranean ecosystem of the Santa Monica Mountains.

B. No Action

The National Park Service would divest all interest in the acid precipitation problem in southern California and specifically the Santa Monica Mountains. This alternative is completely not acceptable because the NPS, as an agency in the Department of the Interior, has a legal responsibility to protect and preserve this country's natural resources.

C. Monitor Acid Rain

The National Park Service would develop an acid deposition monitoring program within the Santa Monica Mountains. The program would be funded by the NPS and become a part of the National Atmospheric Deposition Program (NADP). Both wet and dry deposition samples would be collected at each monitoring location. The NPS would also seek support and technical expertise through a cooperative program with the State Air Resources Board, the South Coast Air Basin, and the South Coast Central Air Basin.

4. RECOMMENDED COURSE OF ACTION

A. Monitor Acid Rain

The National Park Service will initiate and develop an acid deposition project to monitor both dry and wet deposition. In order to implement this progran an increase in base funds will be required. Other alternatives for funding include cooperative efforts between the park and the NPS Air and Water Quality Division, Local and State agencies or private individuals (donations). Field logistics and monitoring of the deposition collectors will be provided by the Division of Resource Management. These data collected will be initially processed by the park and detailed analyses of the deposition samples will be conducted by the NADP.

B. Monitoring Actions

At least two acid deposition monitoring stations will be installed in the Santa Monica Mountains. These devices will be situated so that representative samples will be

collected to provide information on acid deposition gradients between the developed eastern Santa Monica Mountains and the lesser impacted western section. Both dry and wet deposition will be monitored.

A precipitation collector will also be installed at each site to obtain precipitation data. The rainfall will be monitored at the time when the wet and dry clectors are serviced. All of this information will then be incorporated within the NADP subsequent to routine quantitative analysis by staff personnel.

C. Personnel Requirements

Natural Resource Management Specialist (0.15 FTE, funded in park base) and one park technician, 130 work days (0.5 FTE).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	10900	11400	11900	12500	13000
2 Monitors	16000	-0-	-0-	-0-	-0-
Equipment Calibration	1000	1100	1200	1300	1400
Supplies, Equipment, and Motor Vehicle	4800	5600	6000	6400	6800
TOTAL:	32700	17500	18400	19400	20300
Funds Available in Park Base	4200	4400	4500	4700	4800
Funds Requested from Region	28500	13700	15100	16600	18300

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-15 -- MONITOR MEDEA CREEK TO DETERMINE COLIFORM SOURCE

Water Resource Management Number: WR-4
Park Priority: 14
Status: Proposed

2. STATEMENT OF PROBLEM

Medea Creek, which flows through National Park Service property at Paramount Ranch, has extremely high levels of bacteriological contamination. Fecal coliform levels regularly exceed the EPA criteria for safe water for human contact (200 fecal coliform/100 ml). NPS monitoring during the past two years has documented fecal coliform levels which have exceeded 35,000 fecal coliform/100 ml. These levels pose a threat to public safety and are impacting the natural resources at Paramount Ranch and the Medea Creek basin while decreasing the recreational opportunity.

The Congressional mandate (P.L. 95-625) which established the national recreation area directed the NPS to preserve the natural resources while promoting public recreation in the Santa Monica Mountains. Information is needed to identify the source of this contamination so that procedures can be implemented to rectify this problem.

3. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Continue Present Status

Currently, the NPS is monitoring bacteriological contamination within the Santa Monica Mountains. Fecal coliform samples are collected at Paramount Ranch. However, neither funds nor personnel are available to intensify the monitoring program in Medea Creek to determine the source of the contaminants. Therefore, this alternative would provide for the continuation of a monitoring program at Paramount Ranch to ascertain coliform levels but the source of the pollution problem would not be identified nor could the NPS take action to rectify the problem.

B. No Action

The NPS cannot consider this alternative due to the potential health threat to the visiting public at Paramount Ranch due to the high fecal coliform levels which have been monitored.

C. Initiate Medea Creek Coliform Monitoring Program

The NPS would intensify it's fecal monitoring program in Medea Creek. An expanded monitoring network would be established which would enable the source of pollutants to be identified.

4. RECOMMENDED COURSE OF ACTION

A. Initiate Medea Creek Study

The NPS will expand it's current monitoring program for fecal coliform contamination in the Medea Creek basin. The monitoring network will be intensified upstream from Paramount Ranch. Each tributary will be monitored to ascertain fecal coliform levels. As data are collected and analyzed, the network will concentrate in areas where high concentrations of fecal coliform are present. The network will continue to be "fine-tuned" until a definitive source of contaminants can be identified. The NPS will then work to resolve the pollution problem through appropriate channels to ensure waters are of sufficient purity to promote public recreation and a healthy ecosystem.

B. Monitoring

Surface water samples will be obtained from various locations within the Medea Creek monitoring network. Monitoring will be done on a weekly interval for a period of one year. Sampling sites will change in accordance with data obtained from previous samples collected. Once the potential site of pollution is identified samples will continue to be collected until sufficient data have been acquired to verify the source of contamination.

C. Personnel Requirements

Resource Management Specialist (0.05 FTE, funded in park base) and one park technician, 65 work days (0.25 FTE).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	4800	5200	500	-0-	-0-
Supplies, Equipment and Motor Vehicle	5000	6800	3000	-0-	-0-
TOTAL:	9800	12000	3500	-0-	-0-
Funds Available in Park Base	1400	1600	500	-0-	-0-
Funds Requested from Region	8400	10400	3000	-0-	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-16 -- MONITOR STREAM PRODUCTIVITY

Water Resource Management Number: WR-5
Park Priority: 28
Status: Proposed

2. STATEMENT OF PROBLEM

Stream productivity is directly related to the health of the ecosystem. Stream discharge, substrate (and it's associated coarseness), water depth, hydroperiod, sun exposure, and other environmental factors all contribute to the effectiveness of a macrohabitat for it's productivity. Each of these factors is important in determining the overall composition, species diversity, and number of organisms which reside in a stream. These organisms include plankton (free floating/drifters), benthos (bottom dwellers, relatively little movement), and nekton (free swimmers) life forms. The water quality of a stream directly affects the quality of life residing in the stream and the abundance/diversity of the macrohabitat.

The productivity of stream courses and their associated watersheds has not been determined in the Santa Monica Mountains. Currently, urban development is encroaching into the mountains at a rapid rate impacting sensitive riparian communities, acquatic life forms, and degrading the quality of water. The National Park Service needs information regarding the overall productivity in the streams to better preserve the ecosystem and provide information to park managers for the land protection program. A study is needed whereby watersheds would be analyzed; biological and physical characteristics determined; and stream courses ranked and prioritized based on data acquired to ensure NPS compliance with the park's legislative mandate to "preserve the natural resources" of the Santa Monica Mountains (P.L. 95-625). Other Federal laws and executive orders apply including; Clean Water Act of 1977, NEPA 1969, Endangered Species Act 1973, Coastal Zone Management Act 1972, Executive Order 11990 (protection of wetlands), Anadromous Fish Conservation Act 1974, Fish and Wildlife Coordination Act 1958, Land Conservation Fund Act 1964, and the Organic Act 1916.

1. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Continue Present Status

Currently, limited biological data for water resource investigations have been collected by the USGS and NPS in the Santa Monica Mountains. During the biyearly water quality sampling by the USGS, physical stream characteristics and chemical analyses were conducted.

Limited biological sampling is also included (bacteriological contamination, dissolved oxygen, BOD) during this monitoring routine. However, data is not collected regarding biological indicators, species diversity and abundance, and to assess the overall productivity of the streams. Continuation of this approach would not provide adequate information to formulate sound resource management or land protection decisions based on stream/watershed productivity.

B. No Action

The NPS would not initiate nor conduct stream productivity studies in the Santa Monica Mountains. This alternative cannot be considered because it would result in insufficient information available to park management to preserve and perpuate the natural resources in the Santa Monica Mountains.

C. Initiate Stream Productivity Studies:

The National Park Service would initiate a cooperative stream productivity project with the U.S. Geological Survey. The purpose of the study would be to acquire baseline resource information on both physical and biological stream parameters in various watersheds throughout the Santa Monica Mountains. The analysis would determine the faunal composition of streams monitored, determine the impacts associated with various levels of development, and develop a classification scheme for streams within the mountains. These data would be of significance for prioritizing the protection of watersheds through resource management policy and land protection programs.

4. RECOMMENDED COURSE OF ACTION

A. Cooperative Stream Productivity Program

The NPS will initiate a cooperative stream productivity program with the USGS. Initally, major watersheds will be chosen for monitoring. Both biological and physical parameters will be analyzed for upstream and downstream locations. The monitoring will determine the spatial and temporal variance of these parameters throughout the wet and dry periods and will acquire data for three years in these watersheds to account for yearly variance associated with changing environmental and man induced changes.

B. Monitoring Actions

Monitoring activities will be conducted by both NPS and USGS personnel. The USGS will monitor the water

quality, physical characteristics, and the biological parameters at each site at least three times during the dry season and another three times during the wet season. Specifically, monitoring will be done to analyze the phytoplanton, benthic invertebrates, insects, and periphyton. Additionally, NPS personnel will collect stream data on a biweekly schedule to document changing bacteriological conditions, dissolved oxygen, pH, stream temperature, specific conductance, rainfall, and discharge. Once sufficient data are acquired, then analyses of these data will commence. The study will provide information regarding the temporal and spatial productivity within a watershed and comparative information between basins analyzed. These data will be of importance to park management providing insight into stream productivity, changes in productivity related to environmental and man induced changes, and provide a classification system (ranking stream segments in their order of importance) from which the resource management and land protection programs can formulate appropriate protection plans for the Santa Monica Mountains.

C. Personnel Requirements

Resource Management Specialist (0.05 FTE, funded in park base)and one park technician, 130 work days (0.5 FTE).

D. Funding:

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	-0-	8100	8600	9200	-0-
USGS Contract	-0-	10000	10500	11000	-0-
Supplies, Equipment	-0-	3000	3200	4800	-0-
TOTAL:	-0-	21100	22300	25000	-0-
Funds Available in Park Base	-0-	1400	1600	1800	-0-
Funds Requested From Region	-0-	19700	20700	23200	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-17 -- MONITOR TOXIC METALS AND DETERMINE SOURCE

Water Resource Management Number: WR-6
Park Priority: 26
Status: Proposed

2. STATEMENT OF PROBLEM

During routine water quality monitoring by the cooperative NPS and USGS water resource program, extremely high concentrations of heavy metals were detected in Latigo Canyon. Data collected during the November-1982, and March-1983 monitoring found trace metal concentrations which exceeded EPA's criteria for water quality in surface water. Of concern are extremely high levels of mercury (2.2 mg/1), lead (4500 mg/1), copper (640 mg/1), total arsenic (32 to 34 mg/1), cadmium (470 mg/1), chromium (450 mg/1), and zinc (2500 mg/1). Some of these high trace metal concentrations are considered toxic to wildlife, freshwater and marine life, and they present a potential health threat to mountain recreators.

Detailed analysis of the toxic metals buildup is required to better understand the relationship between surface water constituents within the Mediterranean ecosystem of the Santa Monica Mountains, causation of these high levels, and the role of fire in regards to the levels monitored. The information is necessary if the NPS is to manage the National Recreation Area for resource protection as specified in the Congressional mandate (P.L. 95-625). Numerous other Federal laws are also applicable to the purpose of the study as well as the Memorandium of Agreement between the EPA and the NPS to protect water resources in our nation's NPS areas.

3. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Continue Present Status

Water quality monitoring programs in the Santa Monica Mountains are limited in nature and funding. Currently, the NPS and USGS are cooperating to obtain data at selected sites to provide water chemistry information during the wet and dry season. The research does not provide for detailed information acquisition when a specific water quality problem develops. Therefore, this alternative does not provide the flexibility required to "fine tune" a monitoring program and thoroughly examine areas with water quality problems when detected. Hence, detailed information could not be obtained providing information necessary to adequately protect the natural resources in the Santa Monica Mountains when "alert" levels of water constituents are

determined by routine monitoring.

B. No Action

The NPS would not initiate a program to analyze water quality problems when detected. This approach would not completely satisfy the Congressional mandate (P.L. 95-625) "to preserve the natural resources of the Santa Monica Mountains".

C. Initiate Toxic Metals Monitoring Program

The NPS would initiate a cooperative toxic metals monitoring program with the USGS. The analysis would be conducted for three years and would monitor surface waters in Latigo Canyon. Both USGS and NPS personnel would collect field data for application to the program. In the event that other areas of the mountains experience similar high levels then they would be targeted for future analysis. The program would be of value to park management in determining the source of toxic metals, impact to the natural resources (and propose mitigation of impact if from man induced causes), and determine the potential impacts to recreators in the area and it would also provide valuable information to the fuels management program in regards to the role of fire and toxic metals release.

4. RECOMMENDED COURSE OF ACTION

A. Initiate Cooperative Toxic Metals Monitoring Program

The National Park Service will initiate a cooperative toxic metals monitoring program with the USGS. The research will be conducted for a period of three years and data collected in Latigo Canyon or another watershed where similar conditions are found to have occurred. The study will evaluate toxic metal concentrations in the canyon and determine impacts to both park resources and recreators. A final management report will be written, including data analysis, and recommendations made regarding mitigation of the toxic metals buildup if from other than natural sources.

B. Monitoring Actions

Data collected in conjunction with this program will provide information on the source, occurrence, and impact toxic metals have in the area. The USGS will collect samples from a network of sampling sites at upstream and downstream locations. Data will be

collected to determine stream flow, sediment characteristics, and water chemistry. A geology and soil survey of the canyon will also be prepared. In addition, the NPS will monitor, on a frequent basis (at least twice per month), the biological and physical stream characteristics within the canyon. This will include, but not be limited to, stream discharge, stream gauge heights, specific conductance, fecal coliform concentrations, BOD, pH, temperature, and stream depth/width.

C. Personnel Requirements

Natural Resource Management Specialist (0.05 FTE, funded in park base) and one park technician, 65 work days (0.25 FTE).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	-0-	4800	5200	5500	-0-
USGS Contract	-0-	15000	15800	16600	-0-
TOTAL:	-0-	19800	21000	22100	-0-
Funds Available in Park Base	-0-	1400	1600	1800	-0-
Funds Requested from Region	-0-	18400	19400	20300	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-N-6 -- DETERMINE RAINFALL DISTRIBUTION

Water Resource Management Number: WR-7
Park Priority: 22
Status: Proposed

2. STATEMENT OF PROBLEM

The hydrologic budget of the Santa Monica Mountains includes both natural and human related inputs. The only natural source of freshwater contributions within the mountains is derived from rainfall events which occur mostly between the months of November and May. A total of 18 to 26 inches of precipitation are normally input into the ecosystem on an annual basis. The variance in rainfall throughout the mountains is directly related to the distance from and the elevation above the Pacific Ocean.

Rainfall totals are derived from monitoring stations located throughout the mountains. Four of these stations have a long term periods of record dating back to the early 1950's. Other monitoring stations have been established in more recent times by various Federal (including the National Park Service), State, and local agencies. Even though all of these stations actively monitor rainfall on a daily basis, an analysis of this "interagency" network has not commenced and it is not presently known how representative these rainfall data are for depicting hydrologic inputs into the ecosystem. Information of this caliber is necessary in order to formulate effective resource management decisions to preserve the natural resources in the mountains. In particular, a representative rainfall record is necessary for effective water resource and floodplain management, fire management, and safety considerations for the people who reside in flood prone areas. The park's Congressional mandate, P.L. 95-625, is directly applicable to this program for resource protection as well as other Federal Laws and Executive Orders.

3. Alternative Actions and Their Probable Impacts

A. Continue Present Status

Currently, various Federal, State, and local agencies collect rainfall data for their particular interest. Four of these sites are long-term NOAA weather stations. Little has been done to coordinate interagency data collection and information exchange. In addition, data analysis has not been completed to determine if present stations accurately reflect rainfall inputs for their particular location. Some stations may be providing redundant information and some "windows" in the data base may exist. Continuation of this approach would result in more data acqusition at each particular site,

however, the data collected may not be a true representation of rainfall patterns, contributions, or trends in the mountains.

B. No Action

The National Park Service would divest all interest in rainfall contributions in the Santa Monica Mountains. This alternative is unacceptable due to data requirements for effective resource and fire management programs. The NPS would be in non-compliance with P.L. 95-625.

C. Initiate Rainfall Distribution Study

The National Park Service would initiate a rainfall distribution study throughout the Santa Monica Mountains. Current precipitation monitoring stations would continue to collect rainfall data. In addition, an extensive network of rainfall gauges would be located throughout the mountains. This study would provide information on the spatial rainfall contributions within the mountains; where current precipitation "windows" exist in the monitoring network; and determine which stations are indeed representative of hydrologic inputs from storm events for the area they represent. Once this analysis is completed, a rainfall monitoring network would be established to "fine tune" the monitoring program and to provide management with representative ranfall data.

4. RECOMMENDED COURSE OF ACTION

A. Initiate Rainfall Distribution Study

The National Park Service will take the lead role in developing a rainfall distribution study for the Santa Monica Mountains. Rainfall stations currently monitored by various Federal, State, and Local agencies will be incorporated within the network. In addition, the NPS will install an appropriate number of new monitoring stations. Data will be collected by the National Park Service and once sufficient data are collected, then statistical analysis will be completed. The study will require two years of monitoring on a biweekly interval. Once these data have been analyzed a management report will be written discussing the significant results of this program, the spatial variance in rainfall throughout the 225,000 acre Santa Monica Mountains Zone, key monitoring locations for rainfall, and application of rainfall data to improve resource management programs requiring these data (i.e., water resources and fire management in particular).

B. MONITORING ACTIONS

The National Park Service will coordinate this rainfall monitoring program with all Federal, State, and local agencies currently collecting these data in the Santa Monica Mountains. All data will be acquired for historic conditions and these long-termed monitoring locations will be the focal points of the monitoring network to be developed. The NPS will also install numerous rainfall gauges with a density of one gauge per six square miles. Data will be collected by the NPS on a biweekly interval for the duration of the project which will be two fiscal years. Once sufficient data have been collected, analysis will be done to determine the spatial and temporal distribution of precipitation. Utilizing the Thieson Polygon procedure, data from each rainfall gauge will be compared with other gauges in the vicinity and with the nearest immediate long-term monitoring station. Based on this analysis, conclusions will be made regarding the effectiveness of each permanent monitoring station for reflecting the total precipitation which had occurred in the mountains in the representative area surrounding the gauge. These data will be of paramount importance toward developing an effective resource management program for the park's water resources, determining moisture content in the vegetation community in regards to fire danger, and as an alert system for flood prone areas during hydrologic events.

C. Personnel Requirements

Natural Resource Management Specialist (0.10 FTE, funded in park base) and one park technician, 130 work days (0.50 FTE).

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	-0-	9500	9900	10400	-0-
Field Stations	-0-	5000	-0-	-0-	-0-
Supplies, Equipment and Motor Vehicle	-0-	2000	3000	3300	-0-
TOTAL:	-0-	16500	12900	13700	-0-
Funds Available in Park Base	-0-	2800	2900	3000	-0-
Funds Requested from Region	-0-	13700	10000	12300	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-N-7 -- ANALYZE URBAN HYDROLOGIC IMPACTS

Water Resource Management Number: WR-8
Park Priority: 23
Status: Proposed

2. STATEMENT OF PROBLEM

One of the significant natural resource issues and concerns which must be addressed by the National Park Service in the Santa Monica Mountains in order to preserve and perpetuate the Mediterrranean ecosystem is that of urban encroachment and land development. The major threat to the integrity of the natural and cultural resources stems from the rapid, and sometimes insensitive urban encroachments within the mountains and along the coast. The result is a rapid change in species diversity and abundance through alteration of wildlife habitat and native vegetation, air and water quality deterioration, loss of cultural diversity, and irretrievable loss of cultural remains.

Urbanization has both direct impacts through the commitment of lands to development and indirect impacts as more lands are required to provide residential and commercial services. Both the biological and hydrological resources of the Santa Monica Mountains are threatened. Stream banks and flood plains have become attractive sites for development, at the expense of the riparian vegetation community. Upstream residential development has impacted both the rate and quality of stream discharges. Slope stabilization and stream channelization activities have increased the sediment load and runoff transported by the streams. Flow regimes have been impacted and nutrient content of natural water courses altered through the discharge of sewage effluent directly into the stream channels.

Analysis of long-term hydrologic data is necessary to better understand the actual impact of urbanization within the Santa Monica Mountains. Hydrologic records for extensively developed watersheds have been maintained since the early 1900's. A statistical approach, quantifying the actual hydrologic impacts, would assist park managers in formulating recommendations to mitigate impacts from future development in lesser developed watersheds. This information would assist the NPS with implementing the Congressional mandate (P.L. 95-625) to preserve the natural resources of the Santa Monica Mountains. In addition, this knowledge is necessary for park managers to effectively manage the park in regards to other environmental laws, especially the protection of floodplains and wetlands (E.O. 11988 and E.O.11990).

3. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Continue Present Status

Currently, historic records exist which document flow regimes within the major watersheds during the past 80 years in the Santa Monica Mountains. However, these records have not been throughly analyzed to ascertain the impacts associated with development. The continuation of this alternative would provide for the maintenance of historic hydrologic records without appropriate analyses of these data.

B. No Action

The NPS would not initiate a study to determine hydrologic impacts associated with development in selected watersheds in the Santa Monica Mountains. The "no action" is not a viable alternative if the NPS is to preserve the natural resources as directed by P.L. 95-625.

C. Initiate Hydrologic Impacts Study

The NPS would initiate a study to determine impacts on the hydrologic regime in Topanga and Malibu Canyons associated with development. This alternative would provide information to management regarding the quantitative impacts on the water resources from development in these canyons. From this information, park managers could better assess the ramifications of development in the mountains and recommend mitigation to reduce hydrologic impacts associated with development when necessary.

4. RECOMMENDED COURSE OF ACTION

A. Initiate Hydrologic Impacts Study

The NPS will initiate a study to analyze over 80 years of hydrologic records, including both inputs and outputs, to ascertain the impacts on the hydrologic regime from development in Topanga and Malibu Canyons. Impacts to be analyzed include changes in stream discharge, potential areas of flooding, quantity of waters flowing in the watershed, and water quality. Recommendations will be made to park management regarding quantative hydrologic impacts, floodplain alteration, water quality degradation, and mitigation required to reduce impacts associated with development in other watersheds.

B. Monitoring

Stream discharge data and water quality data will be required for this study. The historic record is currently on file at park headquarters. Contemporary hydrologic data will be obtained from the agencies currently monitoring these parameters in Topanga and Malibu Canyons. The NPS will continue to monitor stream discharge and water quality parameters in the various watersheds where data are collected by the NPS/USGS water resource monitoring program. These data will be utilized in the hydrologic assessment for management recommendations in the final report to be generated by this study.

C. Personnel Requirements

Natural Resource Management Specialist (0.05 FTE, funded in park base)

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	-0-	-0-	-0-	1400	1600
Supplies, Equipment and Motor Vehicle	-0-	-0-	-0-	5000	5500
TOTAL:	-0-	-0-	-0-	6400	7100
Funds Available in Park Base	-0-	-0-	-0-	1400	1600
Funds Requested from Region	-0-	-0-	-0-	5000	5500

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-18 -- CONTINUE COOPERATIVE WATER RESOURCE MANAGEMENT

Water Resource Management Number: WR-9 *
Park Priority: 13
Status: Proposed

* a component of the Cooperative Resource Management Project

2. STATEMENT OF PROBLEM

Land use practices, especially in regards to impacts on the water resources, are of concern in the Santa Monica Mountains. The management philosophy of the recreation area is aimed at cooperation of agencies and individuals, particularly residents and landowners, to achieve common goals. This philosophy, combined with the stated intent that all lands within the boundary will not be public lands, dictates a positive and active program commitment to work cooperatively with landowners and other agencies actively involved with water resource issues and management policy.

The extent to which the water resource characteristics will be preserved will be determined by the actions of the regulatory agencies, landowners, and private groups within the mountains. The NPS will direct water resource management on lands acquired in fee and, to a lesser extent, on acquired easements. Cooperation with other agencies/individuals will be sought in other areas within the mountains to ensure that the quality of waters are not degraded and that water courses maintain natural flow conditions. The course of action to be pursued by the NPS for cooperative land stewardship is delineated by the park's Resource Management Plan (1982) and the General Management Plan (1983).

3. ALTERNATIVE ACTIONS and THEIR PROBABLE IMPACTS

A. Continue Present Status

The present activities currently pursued by the NPS are not adequate to meet the needs of a comprehensive water resource management program for the mountains. A cooperative program for water quality and quantity monitoring was initiated with regulatory or private groups where site specific samples are acquired. However, a cooperative effort, except for issues which are addressed by the NPS when approached by an agency or individual, has not commenced. The continuation of this approach will not adequately meet the management objectives of this water resource management plan nor will it enable a protection program for water resources preservation to be implemented.

B. NO ACTION

The NPS would exercise water resource management activities only on lands it administers (fee or acquired easement lands). Requests for assistance on water resource management issues on all other lands would be denied. No assistance to other agencies or to private landowners would be offered. Such actions by the NPS could directly conflict with the Congressional Mandates (P.L. 95-625), stated management objectives, and would violate Federal water resource laws.

C. INITIATE COOPERATIVE WATER RESOURCE MANAGEMENT PROGRAM

The NPS would actively pursue water resource management activities in cooperation with other land management and land use regulatory agencies and private landowners within the recreation area boundary. All appropriate agencies would be identified and a consensus on common management objectives sought. Projects would be implemented to meet these objectives. The Water Resource Management Plan and program would become the focal point for addressing water issues and formulating action plans to resolve water resource problems. This would enable ecosystem management to be practiced by all cooperating agencies while integrating landowner desires and needs with water resource requirements. This alternative would ensure adequate protection and consideration is given to the water resources, satisfy the Congressional mandates, meet the management policies and objectives of the park, and comply with Federal water resource law.

4. RECOMMENDED COURSE OF ACTION

A. Cooperative Water Resource Management Program

A cooperative water resource management program is necessary to integrate water resource requirements with other agencies and private landowners/individuals. The NPS will assume leadership in pursuing a water resource outreach program within the Santa Monica Mountains. Water resource issues to be addressed include (but are not limited to) water quality, water quantity, sedimentation, flood prone areas and flooding, water rights, maintenance and preservation of natural water courses and riparian communities, erosion, floodplain alterations, toxic wastes, sewage and septic system problems, stream productivity, hydrologic inputs, point and non-point source discharges of contaminants, stream channelization, preservation of coastal lagoons, and data base development and data exchanges between cooperating agencies.

B. Monitoring Actions

Water resource activities conducted by all agencies will be coordinated to ensure that duplication of effort is not a common occurrence. A data exchange program will be implemented and the NPS will take a lead role in data base development for the mountains. Data assembled will be readily accessible to all agencies and individuals via computer or hardcopy transfer.

C. Personnel Requirements

Assistant Superintendent, Land Use and Resource Management, Chief Resource Management Division, Natural Resource Management Specialist, and members of the cooperative natural resource management team. No additional funding will be sought at this time in lieu of funding which will be provided by the Cooperative Resource Management Program (RM-13) as specified in the Resource Management Plan (1982). In addition, the base funds in the park currently provide for the personal services of the first three positions listed above.

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	1000	1000	1000	1000	1000
Contracts	-0-	-0-	-0-	-0-	-0-
TOTAL:	1000	1000	1000	1000	1000
Funds Available in Park Base	1000	1000	1000	1000	1000
Funds Requested from Region	-0-	-0-	-0-	-0-	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-19 -- ANALYZE WATER RIGHTS

Water Resource Management Number: WR-10
Park Priority: 24
Status: Proposed

2. STATEMENT OF PROBLEM

The legal complexities regarding the issue of water rights is difficult to address in the Santa Monica Mountains. The numerous landowners and holders of water rights within the mountains complicate the task of documenting and scoping these rights. The Superintendent maintains record of water rights acquired by the NPS and those rights maintained by third party owners within the recreation area. However, assistance is needed from Region and the Water Resource Division to clarify water rights issues in the mountains and to develop a comprehensive listing of these rights.

3. ALTERNATIVE ACTIONS and THEIR PROBABLE IMPACTS

A. Continue Present Status

Currently, water rights within the national recreation area have been acquired from the owners of record for properties acquired by the NPS. However, the NPS has not acquired existing water rights owned by third parties within the mountains. The Superintendent maintains a record of water rights acquired by the NPS and those rights maintained by third party owners within the NRA. This alternative would not generate the detail of informmation which is required for effective water right protection and documentation within the mountains.

B. No Action

The park would maintain the status quo regarding water rights documentation. No effort would be made to clarify water rights issues in the mountains.

C. Water Rights Program

Assistance would be provided by Region and the Water Resource Division to completely analyze water rights in the mountains. Holders of water rights would be identified and information from the program input into the lands resource and administration programs.

4. RECOMMENDED COURSE OF ACTION

A. Initiate a Water Rights Program

The park will initiate a water rights program with both Region and the Water Resource Division personnel. Water rights issues and how they pertain to the NPS operation at the Santa Monica Mountains will be identified. A complete documentation of water rights within the mountains will be prepared and this information exchanged between park divisions, Region, the Water Resource Division, and interested agencies and individuals.

B. Personnel Requirements

Natural Resource Management Specialist (0.05 FTE, funded in base funds) and the appropriate Regional and Water Resource Division Personnel.

C. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	-0-	1400	-0-	-0-	-0-
Region and Water Resource Funds	-0-	5000	-0-	-0-	-0-
TOTAL:	-0-	6400	-0-	-0-	-0-
Funds Available in Park Base	-0-	1400	-0-	-0-	-0-
Funds Requested from Region and Water Resources	-0-	5000	-0-	-0-	-0-

WATER RESOURCES PROJECT STATEMENT

1. SAMO-RM-20 -- CONTINUE STREAM REHABILITATION

Water Resource Management Number: WR-11
Park Priority: NA
Status: Initiated

2. STATEMENT OF PROBLEM

Stream courses and riparian communities throughout the Santa Monica Mountains have been impacted by development activities. In some instances, these disturbed channels could be restored thereby enhancing current conditions and promoting proper resource protection and stewardship. The NPS should take an active role in promoting rehabilitation efforts throughout the mountains. Surveys need to be conducted so that areas where rehabilitation is feasible can be identified and a cooperative effort initiated with other regulatory authorities to accomplish this task.

The NPS is required by the enabling legislation (P.L. 95-625) to manage the national recreation area in a manner which will preserve and enhance it's natural resources. This project would assist with fulfilling this mandate while satisfying other Federal laws and Executive Orders including E.O. 11988 and 11990, the Wetlands Bond Act, the Organic Act, the Coastal Zone Management Act, and the EPA/NPS Memorandum of Understanding for water resource preservation.

3. ALTERNATIVE ACTIONS AND THEIR PROBABLE IMPACTS

A. Continue Present Status

An effort has not been made to survey potential stream courses and riparian communities for rehabilitation throughout the mountains. Limited surveys have been completed on some streams including a part of Medea Creek. Other streams would be analyzed on a case by case basis but an intensive effort for this purpose would not begin. This alternative would not satisfy the Congressional mandate for the park and is therefore unacceptable.

B. No Action

The NPS would not initiate nor conduct stream rehabilitation surveys within the Santa Monica Mountains. This alternative is unacceptable because of the mandate issued to the Department of the Interior by Congress for this national recreation area.

C. Initiate Rehabilitation Surveys

The NPS would initiate surveys throughout the Santa Monica Mountains to develop strageties for stream and riparian restoration. Areas of impact would be identified and prioritized for restoration purposes. Plans would be developed and cooperation sought from other regulatory authorities. This alternative would assist the NPS with complying with the park's enabling legislation.

4. RECOMMENDED COURSE OF ACTION

A. Initiate Stream Rehabilitation Surveys

The NPS will initiate a stream and riparian rehabilitation survey program. Streams with significant impact which have important ecosystem functions will be prioritized and plans will be developed to initiate rehabilitation. Areas of concern requiring immediate attention include Medea Creek, Malibu Creek, and Zuma Lagoon. Other areas will be surveyed and added to the list on a time available basis. The restoration effort will include re-establishing natural stream flow characteristics, removal of inappropriate structures in the stream channel, removal of debris, and riparian vegetation planting.

B. Monitoring

Determine areas of impact along stream courses, degree of impact, significance to ecosystem functions, stream flow characteristics, stream bed roughness coefficients, channel gradient, channel side slopes, debris impact, and natural riparian vegetation species.

C. Personnel Requirements

Natural Resource Management Specialist (0.05 FTE, funded in park base) and other staff personnel on a case by case basis.

D. Funding

	FY-1	FY-2	FY-3	FY-4	FY-5
Personal Services	1400	1600	1800	2000	2200
TOTAL:	1400	1600	1800	2000	2200
Funds Available in Park Base	1400	1600	1800	2000	2200
Funds Requested from Region	-0-	-0-	-0-	-0-	-0-

Park: Santa Monica Mountains NRA

WATER RESOURCES PROJECTS
PROGRAMMING SHEET

Date: March 1, 1985

Proj. No.	Project Title	Proj. Type	NRMP Pri.	Park Pri.	10-237 No.	10-238 No.	Yr 1 Funded/New	Yr 2 Funded/New	Yr 3 Funded/New	Yr 4 Funded/New	Yr 5 Funded/New
							Five Year Program Costs (in $1000) and Fund Sources				
RM-2	MONITOR WATER RESOURCES (QUANTITY)	Mon	3	7		84-801	4.2 (PB) / 15.7 (WR,PB,NRP)	4.4 (PB) / 17.3 (WR,PB,NRP)	4.5 (PB) / 19.3 (WR,PB,NRP)	4.6 (PB) / 21.6 (WR,PB,NRP)	4.8 (PB) / 24.1 (WR,PB,NRP)
RM-3	MONITOR WATER RESOURCES (QUALITY)	Mon	4	7		84-801	4.2 (PB) / 26.6 (WR,PB,NRP)	4.4 (PB) / 29.3 (WR,PB,NRP)	4.5 (PB) / 32.1 (WR,PB,NRP)	4.6 (PB) / 35.0 (WR,PB,NRP)	4.8 (PB) / 38.2 (WR,PB,NRP)
RM-8	MONITOR ACID RAIN	Mon	9	21		804	4.2 (PB) / 28.5 (AP,WR,PB,NRP)	4.4 (PB) / 13.7 (AP,WR,PB,NRP)	4.5 (PB) / 15.1 (AP,WR,PB,NRP)	4.7 (PB) / 16.6 (AP,WR,PB,NRP)	4.8 (PB) / 18.3 (AP,WR,PB,NRP)
RM-15	MONITOR MEDEA CREEK TO DETERMINE COLIFORM SOURCE	Mon	8	14		84-204	1.4 (PB) / 8.4 (WR,PB,RNR,NRP)	1.6 (PB) / 10.4 (WR,PB,RNR,NRP)	0.5 (PB) / 3.0 (WR,PB,RNR,NRP)	-0- / -0-	-0- / -0-
RM-16	MONITOR STREAM PRODUCTIVITY	Mon	11	25		84-203	1.4 (PB) / 19.7(WR,PB,RNR,NRP)	1.6 (PB) / 20.7(WR,PB,RNR,NRP)	1.8 (PB) / 23.2(WR,PB,RNR,NRP)	-0- / -0-	-0- / -0-
RM-17	MONITOR TOXIC METALS AND DETERMINE SOURCE	Mon	10	26		85-202	-0- / -0-	1.4 (PB) / 18.4(WR,PB,RNR,NRP)	1.6 (PB) / 19.4(WR,PB,RNR,NRP)	1.8 (PB) / 20.3(WR,PB,RNR,NRP)	-0- / -0-
N-6	DETERMINE RAINFALL DISTRIBUTION	Res	22				2.8 (PB) / 13.3(WR,PB,RNR,NRP)	2.9 (PB) / 10.0(WR,PB,RNR,NRP)	3.0 (PB) / 12.3(WR,PB,RNR,NRP)	-0- / -0-	-0- / -0-
N-7	ANALYZE URBAN HYDROLOGIC IMPACTS	Res	23				-0- / -0-	-0- / -0-	-0- / -0-	1.4 (PB) / 5.0 (WR,PB,RNR,NRP)	1.6 (PB) / 5.5 (WR,PB,RNR,NRP)

Park: Santa Monica Mountains NRA

PROGRAMMING SHEET

Date: March 1, 1985

Proj. No.	Project Title	Proj. Type	NRMP Pri.	Park Pri.	10-237 No.	10-238 No.	Five Year Program Costs (in $1000) and Fund Sources Yr 1 Funded/New	Yr 2 Funded/New	Yr 3 Funded/New	Yr 4 Funded/New	Yr 5 Funded/New
RM-18	CONTINUE COOPERATIVE WATER RESOURCE MANAGEMENT	Mit					1.0 (PB)	1.0 (PB)	1.0 (PB)	1.0 (PB)	1.0 (PB)
							-0-	-0-	-0-	-0-	-0-
RM-19	ANALYZE WATER RIGHTS	Mit	24				1.4 (PB)	-0-	-0-	-0-	-0-
							5.0 (WR)	-0-	-0-	-0-	-0-
RM-20	CONTINUE STREAM REHABILITATION	Mit					1.4 (PB)	1.6 (PB)	1.8 (PB)	2.0 (PB)	2.2 (PB)
							-0-	-0-	-0-	-0-	-0-

RMP Programming Sheet - Explanation of Column Headings

Column heading	Information to be entered under column
Proj No.	Number assigned project statement in Resources Management Program.
Project Title	Title of project statement and of corresponding 10-237 or 10-238. Corresponding documents should have identical titles.
Proj Type	Natural resources project types are: Mit = mitigation, Mon = monitoring, Res = research. Cultural resource project types are: F= fabric, S= studies.
NRMP Pri	Priority of project in the Resources Management Program.
Park Pri	Priority of project from park's most recent 10-237 or 10-238 priority ranking.
10-237 No.	Increase number and year of the project 10-237. Prefix the number with the year the 10-237 was signed. For example, a 10-237 numbered 025 aand signed in 1984 should be shown as 84-025. Always show the most current 10-237 prepared.
10-238 No.	Package number and year of the project 10-238. Prefix the nnumber with the year the 10-238 was signed. For example, a 10-238 numbered 112 and signed in 1982 should be shown as 82-112. Always show the most current 10-238 prepared.
Five Year Program Costs and Fund Sources	Annual costs (in $1000) should be shown for the five year period begining with the current fiscal year. Amounts already funded should be shown above the line and proposed new funding shown below the line. Enter zeros where no costs are planned. Indicate the source of funds in parenthesis following the costs using the assigned abbreviations shown on the sample programming sheet.

environmental assessment

I. INTRODUCTION

The Water Resource Management Plan summarizes the nature and extent of the water resources in the Santa Monica Mountains. These resources, as well as all components of the ecosystem, are experiencing various levels of impact from urban encroachment. A sound approach, incorporating regulatory and private interests, through cooperation, is necessitated in order to best manage and preserve these resource characteristics and qualities.

II. PROJECT PURPOSE AND NEED.

The Water Resource Management Plan is based upon the most complete data base that the park could develop in the time frame alloted for this task. The plan defines a course of action based upon Federal law and NPS policy for the protection, conservation, use and management of park water resources. The actions to be pursued are set forth in accordance with the park's enabling legislation (P.L. 95-625), other Federal laws and directives, and it complies with the management objectives of the park as specified in the General Management Plan and the Natural Resource Management Plan. The Federal laws, directives, and policies directly applicable to the plan's implementation include:

Organic Act, 1916 (Creating the NPS)
CFR, Title 36, Section 1.2e
Clean Air Act, (1977 Admendments)
National Environmental Policy Act, 1969
Coastal Zone Management Act, 1972
Fish and Wildlife Coordination Act, 1958
NPS/EPA Memorandum of Agreement (Water Quality)
Fish and Wildlife Conservation Act, 1980
Convention for the Protection of Migratory Birds and Game Mammals, 1936
Migratory Bird Treaty Act, 1974
Anadromous Fishes Conservation Act, 1974
Conservation Programs on Government Lands Act, 1960
Clean Water Act
Executive Order 11988 (Floodplain Management Act), 1977
Executive Order 11900 (Protection of Wetlands), 1977

III. PREFERED ALTERNATIVE: IMPACTS AND MITIGATIONS

The prefered alternative is to adopt the Water Resource Management Plan as proposed and initiate funding and resource activities to implement the projects within this subject document. Cooperation with regulatory and private interests is necessary in order to achieve maximum success from this program for resource preservation.

There are no significant environmental impacts associated with any of the proposed projects. The essence for most of the projects is resource monitoring and the only impacts which may result would be through equipment installation or site specific impacts associated with the presence of personnel during monitoring activities. When it is determined that an activity will have a significant impact, the National Park Service will procede with appropriate environmental documentation and seek approval through appropriate regulatory agencies.

IV. OTHER ALTERNATIVES CONSIDERED

No Action. This alternative does not provide for an adequate information base from which the NPS can appropriately provide resource protection as specified by the Congressional Mandate and other Federal laws and Executive Orders.

Continue Present Status. Essentially, the same as the "no action" alternative and it provides for similar environmental consequences.

V. CONSULTATION AND COORDINATION

The following agencies were contacted or they supplied information/data for input into the Water Resource Management Plan:

NPS Branch of Water Resources
NPS Western Regional Office
U.S. Geological Survey Water Resource Division
Los Angeles County Flood Control District
Ventura County Flood Control District
Las Virgenes Municipal Water District
Metropolitan Water District of Southern California

SUMMARY OF MAJOR IMPACTS

	Alternative A	No Action	Alternative C
Project: Monitor Water Resources (Quality). Acquisition of baseline water quality data for documenting the quality of waters in the Santa Monica Mountains, determining impacts from development activities, and for establishment of water quality criteria for the N.R.A.			
Vegetation	none	water quality degradation could occur	none
Wildlife	limited disturbance to species present while monitoring	none	same as Alternative A
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	samples collected, limited disturbance to channel materials	none	same as Alternative A
Project: Monitor Water Resources (Quantity). Determine stream flow (discharge) rates for watersheds in the Santa Monica Mountains, document peak flow conditions, determine impacts from development on stream flow, and formulate floodplain management programs for protection of stream courses and to protect property and life of those who reside in these areas.			
Vegetation	removal of not more than 25 feet of upstream vegetation in stream channel if it would interfer with accurate discharge measurements.	none	same as Alternative A
Wildlife	limited disturbance to species present while monitoring	none	same as Alternative A
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none
Project: Monitor Acid Rain. Monitor spatial inputs of acid rain and dry deposition within the Santa Monica Mountains, determine acidic concentrations and the associated impacts on a Mediterranean ecosystem.			
Vegetation	none	none	limited disturbance to plants some would be collected
Wildlife	limited disturbance to species present during sampling	none	same as Alternative A
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none

	Alternative A	No Action	Alternative C
Project: Monitor Medea Creek Coliform to Determine Coliform Source. Establish a monitoring network to determine source of coliform contamination in Medea Creek and mitigate impact from these bacteriological pollutants.			
Vegetation	none	none	none
Wildlife	none	none	none
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none
Project: Monitor Stream Productivity. Monitor biological and physical water quality parameters to determine the spatial and temporal variance of these parameters, and develop a classification system to rank the importance of each watershed for ecosystem importance.			
Vegetation	none	none	none
Wildlife	limited disturbance during sampling	none	limited disturbance during sampling, some specimens may be collected for analyses
Soils/Geology	none	none	none
Air Quality	none	none	none
Project: Monitor Toxic Metals and Determine Source. Initiate toxic metals monitoring program in cooperation with the USGS to evaluate toxic metal concentrations, determine relationship of fire to the occurrence of these constituents, and determine impact on ecosystem and recreators			
Vegetation	none	none	none
Wildlife	none	none	limited disturbance to species during monitoring
Soils/Geology	none	none	limited soil samples will collected for analyses
Air Quality	none	none	none
Water Quality	none	none	none
Project: Determine Rainfall Distribution. Develop interagency rainfall monitoring program, install rain gauges at appropriate areas where none exist, monitor rainfall contributions, and develop a rainfall monitoring network, based on data acquired, suitable for reflecting spatial rainfall contributions within the Santa Monica Mountains.			
Vegetation	none	none	possible disturbance at site
Wildlife	none	none	limited disturbance to species species present during sampling
Soils/Geology	none	none	some compaction of soils at monitoring sites
Air Quality	none	none	none
Water Resources	none	none	none

	Alternative A	No Action	Alternative C

Project: Analyze Urban Hydrologic Impacts. Initiate study based on contemporary and historic data to ascertain the impacts on the hydrologic regime from development in Topanga and Malibu Canyons.

Vegetation	none	none	none
Wildlife	none	none	none
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none

Project: Initiate Cooperative Water Resource Program. Develop a cooperative water resource program with other agencies and private landowners/individuals to address significant water resource issues, develop interagency data base, and ensure duplication of monitoring does not occur.

Vegetation	none	none	none
Wildlife	none	none	none
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none

Project: Analyze Water Rights. Initiate a water rights program with the Region and the Branch of Water Resources to address water rights issues and how they relate to NPS operations at the Santa Monica Mountains.

Vegetation	none	none	none
Wildlife	none	none	none
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none

Project: Initiate Stream Rehabilitation. Conduct surveys to determine degree of impact to streams and riparian communities throughout the Santa Monica Mountains, formulate restoration plans, and initiate stream and riparian rehabilitation.

Vegetation	none	none	none
Wildlife	none	none	none
Soils/Geology	none	none	none
Air Quality	none	none	none
Water Resources	none	none	none

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appendices

APPENDIX A

HYDROLOGIC RECORDS ON FILE AT PARK HEADQUARTERS

RAINFALL: Daily Values, Monthly Totals, Means and Extremes.

Bel Air: NOAA Station 619, January 1950-December 1980.

Santa Monica Pier: NOAA Station 7953, January 1950-September 1980.

Topanga Canyon: NOAA Station 8967, January 1950-December 1980.

Lechuza Point: NOAA Station 4867, January 1955-December 1980.

DISCHARGE: Monthly Values (cfs and Acre Feet)

Malibu Creek, USGS-LA County, USGS 1110550, January Water Year 03 to December, Water Year 07; and February, Water Year 31 to September Water Year 78.

Topanga Creek, USGS-LA County, USGS 11104000, January Water Year 30 to September Water Year 78 (no record Water Year 39).

Calleguas Creek, USGS-Ventura County, October Water Year 69-September Water Year 78.

DISCHARGE: Daily Values

Malibu Creek, October Water Year 61-September Water Year 78.

Topanga Creek, October Water Year 61-September Water Year 78.

Calleguas Creek, October Water Year 69-September Water Year 78.

Malibu Creek Water Quality Data

Historic Data Base from Las Virgenes Municipal Water Supply some stations from January 1971-December 1983.

USGS-NPS Water Quality Data:

Baseline data, twice yearly, Water Year 82 and Water Year 83 at the following locations: Triunfo, Zuma, Big Sycamore, Little Sycamore, Arroyo Sequit, Cold Creek, Malibu Creek, Medea Creek, Latigo Canyon (WY-83 only), and Malibu Lake, Malibu Lagoon (WY-82 only).

APPENDIX B

NPS-EPA MEMORANDUM OF UNDERSTANDING: Water Quality Criteria

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
Environmental Protection Agency and
U.S. Department of the Interior

I. PURPOSE

This Memorandum of Understanding has been developed in accordance with the provisions of the Interagency Memorandum of Agreement prescribed in section 304(j) (1) of Public Law 92-500, and executed on August 30, 1973, by the Administrator, Environmental Protection Agency (EPA) and the Secretaries of the Army, Agriculture and the Interior. The purpose of this Memorandum is to: coordinate the programs of the U.S. Fish and Wildlife Service, the National Park Service, and the Heritage Conservation and Recreation Service (HCRS) with the water quality management process administered by the Environmental Protection Agency under sections 201, 208, and 303 of the Clean Water Act; facilitate the participation of these Interior Bureaus in the State and local establishment of water quality goals and the development and implementation of State and local programs to achieve those goals; and assure adequate consideration, under the Clean Water Act, of program needs of these Interior Bureaus.

II. PROVISIONS

A. The U.S. Fish and Wildlife Service, National Park Service, and Heritage Conservation and Recreation Service will to the extent resources permit:

1. Establish a central point in the National and Regional Offices to facilitate Bureau involvement in the water quality management planning process, seek to derive Interior program benefits from improved water quality, and coordinate and integrate regional and field program activities with water quality management programs.

2. Participate in State and local review and State revision of water quality standards providing technical assistance and information on the identification of water uses and water quality criteria necessary to protect water uses including outdoor recreation needs, protection and propagation of aquatic life and wildlife, and preservation of natural and cultural resources under the administrative jurisdiction or trusteeship of the Agency.

3. Participate in the development, implementation, and evaluation of State and areawide water quality management plans, provide appropriate technical assistance and information, and serve on advisory committees where appropriate.

4. Comment to EPA on State adopted water quality standards and State and areawide water quality management plans submitted to EPA for approval.

5. Provide EPA with appropriate technical and other material for inclusion in guidance and other memoranda circulated to EPA Regional Offices and State and areawide agencies.

6. Within 5 months after the effective date of this agreement recommend guidelines to EPA for designating Outstanding National Resource Waters.

7. Within 6 months from the date of publication of mutually approved guidance under E.12, identify waters under jurisdiction of the Assistant Secretary which should be considered for designation as Outstanding National Resource Waters. Participate in identifying such waters in the State water quality standards review and revision process.

8. Submit a work plan for implementing this agreement within 90 days of the signing of this memorandum and prepare an annual progress report reviewing activities of the previous year under this agreement and updating the work plan.

B. United States Fish and Wildlife Service (FWS)

In addition, the U.S. Fish and Wildlife Service will to the extent resources permit:

1. Conduct research and provide technical assistance and information on development of water quality criteria.

2. Advise EPA and State and areawide water quality management planning agencies of FWS monitoring results which indicate pollution levels that are detrimental to fish, wildlife, or their habitat.

3. In cooperation with HCRS, develop integrated water quality/water quantity modeling methods and criteria for determining minimum and optimum stream flows and other physical parameters that are necessary for protection of fish and wildlife and recreational objectives.

4. Assist States and areawide water quality management planning agencies as requested in identifying endangered and threatened species and their critical habitats identified pursuant to P.L. 93-205 in the planning area which are impacted by water quality. Recommend water quality standards and other water quality management plan provisions to the States and areawide agencies where necessary to protect and enhance such species and habitats. FWS will assist, where appropriate, in the development of those provisions.

5. In waters under FWS jurisdiction, comply with applicable Federal, State, interstate and local requirements including State water quality standards as provided in section 313 of the Clean Water Act.

6. Coordinate FWS activities which affect or concern water quality with appropriate water quality management planning agencies.

7. Take an active role in selected special study projects under the water quality management planning process and FWS programs to:

(a) identify water quality management planning activities to protect resources of concern to the FWS;

(b) assist in the development of work plans; and

(c) participate in the development and implementation of the water quality management planning program in cooperation with local, State and other Federal agencies.

8. Encourage State Fish and Wildlife agency involvement in the development, review and revision of water quality standards and development and implementation of water quality management plans.

9. Encourage consideration of public boat ramp and nature trail construction in facilities planning.

10. Consistent with section 208 and related provisions of the Clean Water Act of 1977 and to the extent resources are made available through FWS budget channels:

(a) Complete a National Wetlands Inventory, develop interpretive reports, and make such information available to planning agencies as specified in the Clean Water Act;

(b) Provide technical assistance to EPA Regional Offices and State 208 agencies through training, handbooks, workshops, and direct consultation and advice;

(c) Develop environmental requirements and management techniques for key species in wetlands or riparian habitats.

(d) Develop and demonstrate supplemental nonpoint source Best Management Practices to protect or enhance fish and wildlife resources.

(e) Develop and demonstrate methods and strategies to utilize sewage wastewater for fish and wildlife habitat enhancement.

(f) Initiate research to provide supplemental data on the effects of environmental contaminants on fish and wildlife and their supporting ecosystems from key pollutants listed in Table 1 of the House Committee Print 95-33 (Committee on Public Works and Transportation) and any additional pollutants designated under 307(a).

C. Hertiage, Conservation and Recreation Service

In addition, the HCRS will to the extent resources permit:

1. Identify recreation and open space opportunities and methods. Provide general advice concerning the protection of natural and cultural resources.

2. Prepare program guidelines for State and local governments encouraging the use of Land and Water Conservation Fund grants for the development of recreation and open space opportunities in conjunction with existing and planned wastewater treatment works.

3. Coordinate program activities with the water quality management planning and the Statewide Comprehensive Outdoor Recreation Plan process to maximize outdoor recreational benefits derived from improved water quality and protect natural and cultural resources.

4. Develop guidance, in coordination with EPA and the FWS, encouraging and assisting State and areawide water quality management planning agencies in enhancing outdoor recreation opportunities and protecting natural and cultural resources. HCRS regional offices will distribute the guidance to park and recreation agencies and encourage those agencies to address outdoor recreation in the water quality management process.

5. Encourage appropriate State and local park, recreation, and natural resource agencies and public constituencies to maximize HCRS program benefits derived from improved water quality and to coordinate with and participate in water quality management planning.

6. Provide EPA with appropriate technical material relating to primary and supplemental public recreational opportunities and protection of natural and cultural resources.

7. Convene, in cooperation with EPA, regional conferences to develop an awareness of the primary and supplemental public recreation opportunities of State and local water quality management planning programs.

8. Encourage through guidance the provision of adequate facilities to accept and treat wastes from watercraft equipped with containment devices.

9. In cooperation with FWS, develop integrated water quality/water quantity modeling methods and criteria for determining minimum and optimum stream flows and other physical parameters that are necessary to achieve viable fish, wildlife and recreational objectives.

10. Participate in the development of State and areawide water quality management plans to assure proper consideration and protection of natural and cultural resources which include properties listed in or eligible for the National Register of Historic Places and the National Register of Natural Landmarks. Assist as requested with water quality management plan implementation.

11. Encourage consideration of public boat ramp and nature trail construction in facilities planning.

D. National Park Service (NPS)

The National Park Service will to the extent resources permit:

1. Assist State and areawide water quality management planning agencies in the review and revision of water quality standards to identify:

(a) Water quality conditions necessary to preserve and protect natural and cultural resources within the National Park System;

(b) Appropriate water uses consistent with the NPS responsibility;

(c) Waters which should be considered for designation as Outstanding National Resource Waters.

2. Participate in the development and implementation of State and areawide water quality management plans as necessary to assure proper consideration and protection of natural and cultural resources within the National Park System.

3. Serve on advisory committees in water quality management planning areas where water quality impacts units of the National Park System.

4. Encourage State natural resource management agency involvement in the review and revision of water quality standards and development and implementation of water quality management plans.

5. Take an active role in select demonstration-type projects under water quality management planning and NPS programs to:

(a) identify water quality management planning programs to protect resources under NPS jurisdiction;

(b) assist in the development of work plans;

(c) participate in the development and implementation of water quality management plans to maintain, restore, and enhance the chemical, physical and biological integrity of waters associated with or affecting the involved units of the National Park System.

7. Respond to Interior Bureau comments transmitted under paragraphs 5 and 6 above.

8. Encourage State and areawide water quality management planning agencies to consider nonstructural solutions to water pollution control problems that will preserve and enhance fish and wildlife habitat, open space and outdoor recreation.

9. Ensure that State water quality standards revisions describe the water quality necessary to meet requirements of the Act, including protection of existing and designated beneficial uses and designated Outstanding National Resource Waters.

10. Assure that State and areawide water quality management planning agencies consider State Comprehensive Outdoor Recreation Plan (SCORP) priorities and State fish and wildlife plan priorities and Comprehensive Statewide Historic Preservation Plan priorities.

11. Consult with these Interior Bureaus in the development of guidelines identifying open space and recreation opportunities that can be expected to result from improved water quality, the planning of wastewater treatment works, and waste management policies under section 201(f) of the Clean Water Act.

12. Consult with Interior Bureaus for the purpose of developing EPA guidelines for identifying Outstanding National Resource Waters; within 9 months after the effective date of this agreement, issue the mutually approved guidelines for consideration by the States in the development of water quality standards.

13. During the next scheduled (after mutually approved guidelines are published under E.12) review and revision of Water Quality Standards encourage States to apply the guidelines and consider designating waters identified under A.7 of this agreement by the Assistant Secretary; encourage States to submit a written justification for failure to designate waters identified under A.7 as Outstanding National Resource Waters; upon request of the Assistant Secretary, review (in consultation with the Assistant Secretary and the State) the State's action and, in the absence of a State designation, take under consideration the promulgation of designations pursuant to Section 303(c)(4) of the Clean Water Act, where appropriate.

14. Provide the Regional Directors of these Interior Bureaus with the opportunity to review and comment on water quality management plans and State water quality standards submitted to the EPA Regional Administrators for review and approval. The EPA Regional Administrators will carefully consider comments submitted by these Interior Bureaus in the EPA review and approval process. Upon request if the Director of FWS, HCRS, or NPS, the Deputy Assistant Administrator for Water Planning and Standards will review unresolved concerns and will seek to resolve them prior to approval. The Assistant Administrator for Water and Waste Management will participate upon request of the Assistant Secretary.

6. Comply with State water quality standards in waters within units of the National Park System.

7. Coordinate NPS activities which affect or concern water quality with appropriate water quality management planning agencies.

8. Identify endangered and threatened species and their habitats in units of the National Park System for appropriate State and areawide water quality management planning agencies.

9. Assure that adequate facilities exist in units of the National Park System to accept and treat wastes from watercraft equipped with containment devices.

10. Exercise such other legal authorities and responsibilities as are or may be available to assure the maintenance, restoration, and/or enhancement of existing water quality in units of the National Park System.

E. Environmental Protection Agency

The Environmental Protection Agency will to the extent resources permit:

1. Establish contact points in the National and Regional offices for coordinating the activities under this memorandum.

2. Provide assistance and all necessary information including National guidance to facilitate the timely involvement of Interior Bureaus in the development of water quality management plans. Assist these Interior Bureaus in securing placement on appropriate State and areawide water quality management planning agency mailing lists.

3. Assure that State and areawide water quality management planning agencies actively seek the advice and involvement of these Interior Bureaus and their State and local counterparts in the water quality management planning process including State/EPA Agreement and areawide work program formulation, advisory groups, and development and implementation of water quality management plans.

4. Assure that State and areawide water quality management planning agencies coordinate their activities with the appropriate Interior Bureau activities affecting the planning area.

5. Provide these Interior Bureaus with the opportunity to review and comment on proposed criteria and information developed under sections 304(a) and 403 of the Clean Water Act.

6. Provide these Interior Bureaus with the opportunity to review and comment on proposed regulations, guidance and technical publications under sections 208 and 303 of the Clean Water Act.

15. Support these Interior Bureaus in obtaining resources to implement the provisions of this agreement.

16. Submit a work plan to the Assistant Secretary for implementing EPA responsibilities under this agreement within 90 days from the signing of this memorandum and prepare an annual progress report reviewing activities of the previous year under this agreement and updating the work plan.

Within five years from the effective date of this agreement, the Deputy Administrator and the Assistant Secretary shall review the effectiveness of this agreement in achieving the stated purposes. If, based upon that review or at any time during the course of implementation of this agreement, either the Deputy Administrator or the Assistant Secretary determines that the memorandum needs modification, the Deputy Administrator and the Assistant Secretary shall within 90 days after official notice negotiate such amendments considered appropriate.

Cecil D. Andrus

11-10-78
Date

Cecil D. Andrus
Secretary
U.S. Department of the Interior

11-13-78
Date

Douglas M. Costle
Administrator
U.S. Environmental Protection Agency

APPENDIX C

P.L. 95-625, Santa Monica Mountains N.R.A.
Enabling Legislation

LEGISLATION

SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA

PUBLIC LAW 95-625—NOV. 10, 1978

SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA

SEC. 507. (a) The Congress finds that— 16 USC 460kk.

(1) there are significant scenic, recreational, educational, scientific, natural, archeological, and public health benefits provided by the Santa Monica Mountains and adjacent coastline area;

(2) there is a national interest in protecting and preserving these benefits for the residents of and visitors to the area; and

(3) the State of California and its local units of government have authority to prevent or minimize adverse uses of the Santa Monica Mountains and adjacent coastline area and can, to a great extent, protect the health, safety, and general welfare by the use of such authority.

(b) There is hereby established the Santa Monica Mountains National Recreation Area (hereinafter referred to as the "recreation area"). The Secretary shall manage the recreation area in a manner which will preserve and enhance its scenic, natural, and historical setting and its public health value as an airshed for the Southern California metropolitan area while providing for the recreational and educational need of the visiting public. Establishment. Management.

(c)(1) The recreation area shall consist of the lands and waters and interests generally depicted as the recreation area on the map entitled "Boundary Map, Santa Monica Mountains National Recreation Area, California, and Santa Monica Mountains Zone", numbered SMM-NRA 80,000, and dated May 1978, which shall be on file and available for inspection in the offices of the National Park Service, Department of the Interior, Washington, District of Columbia, and in the offices of the General Services Administration in the Federal Office Building in West Los Angeles, Califo nia, and in the main public library in Ventura, California. After advising the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, in writing, the Secretary may make minor revisions of the boundaries of the recreation area when necessary by publication of a revised drawing or other boundary description in the Federal Register. Description. Boundary revisions, notice to congressional committees and publication in Federal Register.

(2) Not later than ninety days after the date of enactment of this Act, the Secretary, after consultation with the Governor of the State of California, the California Coastal Commission, and the Santa Monica Mountains Comprehensive Planning Commission, shall commence acquisition of lands, improvements, waters, or interests therein within the recreation area. Such acquisition may be by donation, purchase with donated or appropriated funds, transfer from any Federal agency, exchange, or otherwise. Any lands or interests therein owned by the State of California or any political subdivision thereof (including any park district or other public entity) may be acquired only by Lands, waters, and interests, acquisition and consultation.

donation, except that such lands acquired after the date of enactment of this section by the State of California or its political subdivisions may be acquired by purchase or exchange if the Secretary determines that the lands were acquired for purposes which further the national interest in protecting the area and that the purchase price or value on exchange does not exceed fair market value on the date that the State acquired the land or interest: *Provided, however*, That the value of any lands acquired by the Secretary under the exception in this sentence shall be deducted from the amount of moneys available for grants to the State under subsection (n) of this section. Notwithstanding any other provision of law, any Federal property located within the boundaries of the recreation area shall, with the concurrence of the head of the agency having custody thereof, be transferred without cost, to the administrative jurisdiction of the Secretary for the purposes of the recreation area.

Federal property, transferral.

Site transferral.

(3) The Administrator of the General Services Administration is hereby authorized and directed to transfer the site generally known as Nike Site 78 to the Secretary for inclusion in the recreation area: *Provided*, That the county of Los Angeles shall be permitted to continue to use without charge the facilities together with sufficient land as in the determination of the Secretary shall be necessary to continue to maintain and operate a fire suppression and training facility and shall be excused from payment for any use of the land and facilities on the site prior to the enactment of this Act. At such time as the county of Los Angeles, California, relinquishes control of such facilities and adjacent land or ceases the operation of the fire suppression and training facility, the land and facilities shall be managed by the Secretary as a part of the recreation area.

Lands, waters, and interests, identification.

(d)(1) Within six months after the date of enactment of this Act, the Secretary shall identify the lands, waters, and interests within the recreation area which must be acquired and held in public ownership for the following critical purposes: preservation of beaches and coastal uplands; protection of undeveloped inland stream drainage basins; connection of existing State and local government parks and other publicly owned lands to enhance their potential for public recreation use; protection of existing park roads and scenic corridors, including such right-of-way as is necessary for the protection of the Mulholland Scenic Parkway Corridor; protection of the public health and welfare; and development and interpretation of historic sites and recreation areas in connection therewith, to include, but not be limited to, parks, picnic areas, scenic overlooks, hiking trails, bicycle trails, and equestrian trails. The Secretary may from time to time revise the identification of such areas, and any such revisions shall become effective in the same manner as herein provided for revisions in the boundaries of the recreation area.

Revisions.

Plan, submittal to congressional committees.

(2) By January 1, 1980, the Secretary shall submit, in writing, to the committees referred to in subsection (c) and to the Committees on Appropriations of the United States Congress a detailed plan which shall indicate—

(A) the lands and areas identified in paragraph (1),

(B) the lands which he has previously acquired by purchase, donation, exchange, or transfer for the purpose of this recreation area,

(C) the annual acquisition program (including the level of funding) recommended for the ensuing five fiscal years, and

(D) the final boundary map for the recreation area.

(e) With respect to improved properties, as defined in this section, fee title shall not be acquired unless the Secretary finds that such lands are being used, or are threatened with uses, which are detrimental to the purposes of the recreation area, or unless each acquisition is necessary to fulfill the purposes of this section. The Secretary may acquire scenic easements to such improved property or such other interests as, in his judgment are necessary for the purposes of the recreation area.

Improved properties, acquisition.

Scenic easements.

(f) For the purposes of this section, the term "improved property" means—

Definition.

(1) a detached single-family dwelling, the construction of which was begun before January 1, 1976 (hereafter referred to as "dwelling"), together with so much of the land on which the dwelling is situated as is in the same ownership as the dwelling and as the Secretary designates to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures necessary to the dwelling which are situated on the land so designated, and

(2) property developed for agricultural uses, together with any structures accessory thereto as were used for agricultural purposes on or before January 1, 1978.

In determining when and to what extent a property is to be treated as "improved property" for purposes of this section, the Secretary shall take into consideration the manner of use of such buildings and lands prior to January 1, 1978, and shall designate such lands as are reasonably necessary for the continued enjoyment of the property in the same manner and to the same extent as existed prior to such date.

Designation.

(g) The owner of an improved property, as defined in this section, on the date of its acquisition, as a condition of such acquisition, may retain for herself or himself, her or his heirs and assigns, a right of use and occupancy of the improved property for noncommercial residential or agriculture purposes, as the case may be, for a definite term of not more than twenty-five years, or, in lieu thereof, for a term ending at the death of the owner or the death of her or his spouse, whichever is later. The owner shall elect the term to be reserved. Unless the property is wholly or partially donated, the Secretary shall pay to the owner the fair market value of the property on the date of its acquisition, less the fair market value on that date of the right retained by the owner. A right retained by the owner pursuant to this section shall be subject to termination by the Secretary upon his determination that it is being exercised in a manner inconsistent with the purposes of this section, and it shall terminate by operation of law upon notification by the Secretary to the holder of the right of such determination and tendering to him the amount equal to the fair market value of that portion which remains unexpired.

Use and occupancy rights, retention.

Payment.

Termination, notification.

(h) In exercising the authority to acquire property under this section, the Secretary shall give prompt and careful consideration to any offer made by an individual owning property within the recreation area to sell such property, if such individual notifies the Secretary that the continued ownership of such property is causing, or would result in, undue hardship.

(i) The Secretary shall administer the recreation area in accordance with this Act and provisions of laws generally applicable to units of the National Park System, including the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1 et seq.). In the administration of the recreation area, the Secretary may utilize such statutory authority

Administration.

available for the conservation and management of wildlife and natural resources as appropriate to carry out the purpose of this section. The fragile resource areas of the recreation area shall be administered on a low-intensity basis, as determined by the Secretary.

Cooperative agreements.

(j) The Secretary may enter into cooperative agreements with the State of California, or any political subdivision thereof, for the rendering, on a reimbursable basis, of rescue, firefighting, and law enforcement services and cooperative assistance by nearby law enforcement and fire preventive agencies.

Donations.

(k) Notwithstanding any other provision of law, the Secretary is authorized to accept donations of funds, property, or services from individuals, foundations, corporations, or public entities for the purpose of land acquisition and providing services and facilities which the Secretary deems consistent with the purposes of this section.

Report.

(l) By January 1, 1981, the Santa Monica Mountains National Recreation Area Advisory Commission, established by this section, shall submit a report to the Secretary which shall—

(1) assess the capability and willingness of the State of California and the local units of government to manage and operate the recreation area,

(2) recommend any changes in ownership, management, and operation which would better accomplish the purposes of this section, and

(3) recommend any conditions, joint management agreements, or other land use mechanisms to be contingent on any transfer of land.

Report to congressional committees.

(m) The Secretary, after giving careful consideration to the recommendations set forth by the Advisory Commission, shall, by January 1, 1982, submit a report to the Committees referred to in subsection (c) which shall incorporate the recommendations of the Advisory Commission as well as set forth the Secretary's recommendations. Such report shall—

(1) assess the benefits and costs of continued management as a unit of the National Park System,

(2) assess the capability and willingness of the State of California and the local units of government to manage and operate the recreation area, and

(3) recommend any changes in ownership, management, and operation which would better accomplish the purposes of this section.

Comprehensive plan.

(n)(1) The Secretary shall request the Santa Monica Mountains Comprehensive Planning Commission to submit a comprehensive plan, prepared in accord with this section and title 7.75 of the California Government Code (commencing with section 67450), for the Santa Monica Mountains Zone generally depicted on the map referred to in subsection (c) of this section for approval.

(2) The comprehensive plan shall include, in addition to the requirements of California State law—

(A) an identification and designation of public and private uses which are compatible with and which would not significantly impair the significant scenic, recreational, educational, scientific, natural, archeological, and public health benefits present in the zone and which would not have an adverse impact on the recreation area or on the air quality of the south coast air basin;

(B) a specific minimum land acquisition program which shall include, but not be limited to, fee and less than fee acquisition

of strategic and critical sites not to be acquired by the Federal Government for public recreational and other related uses; and a program for the complementary use of State and local authority to regulate the use of lands and waters within the Santa Monica Mountains Zone to the fullest extent practicable consistent with the purposes of this section; and

(C) a recreation transportation system which may include but need not be limited to existing public transit.

(3) No plan submitted to the Secretary under this section shall be approved unless the Secretary finds the plan consistent with paragraph (2) and finds that—

(A) the planning commission has afforded adequate opportunity, including public hearings, for public involvement in the preparation and review of the plan, and public comments were received and considered in the plan or revision as presented to him;

(B) the State and local units of government identified in the plan as responsible for implementing its provisions have the necessary authority to implement the plan and such State and local units of government have indicated their intention to use such authority to implement the plan;

(C) the plan, if implemented, would preserve significant natural, historical, and archeological benefits and, consistent with such benefits, provide increased recreational opportunities for persons residing in the greater Los Angeles-southern California metropolitan area; and

(D) implementation of the plan would not have a serious adverse impact on the air quality or public health of the greater Los Angeles region.

Before making his findings on the air quality and public health impacts of the plan, the Secretary shall consult with the Administrator of the Environmental Protection Agency.

Consultation with EPA.

(4) Following approval of the plan with respect to the Santa Monica Mountains Zone, upon receipt of adequate assurances that all aspects of that jurisdiction's implementation responsibilities will be adopted and put into effect, the Secretary shall—

(A) provide grants to the State and through the State to local governmental bodies for acquisition of lands, waters, and interests therein identified in paragraph (2)(B), and for development of essential public facilities, except that such grants shall be made only for the acquisition of lands, waters, and interests therein, and related essential public facilities, for park, recreation, and conservation purposes; and

Grants.

(B) provide, subject to agreements that in the opinion of the Secretary will assure additional preservation of the lands and waters of the zone, such funds as may be necessary to retire bonded indebtedness for water and sewer and other utilities already incurred by property owners which in the opinion of the Secretary would if left outstanding contribute to further development of the zone in a manner inconsistent with the approved plan developed by the planning commission.

Funds.

No grant for acquisition of land may be made under subparagraph (A) unless the Secretary receives satisfactory assurances that such lands acquired under subparagraph (A) shall not be converted to other than park, recreation, and conservation purposes without the approval of the Secretary and without provision for suitable replacement land.

Assurance requirements.

Grant requirements.

(5) Grants under this section shall be made only upon application of the recipient State and shall be in addition to any other Federal financial assistance for any other program, and shall be subject to such terms and conditions as the Secretary deems necessary to carry out the purposes of this section. Any jurisdiction that implements changes to the approved plan which are inconsistent with the purposes of this section, or adopts or acquiesces in changes to laws regulations or policies necessary to implement or protect the approved plan, without approval of the Secretary, may be liable for reimbursement of all funds previously granted or available to it under the terms of this section without regard to such additional terms and conditions or other requirements of law that may be applicable to such grants. During the life of the planning commission, changes to the plan must be submitted by the planning commission to the Secretary for approval. No such application for a grant may be made after the date five years from the date of the Secretary's approval of the plan.

Plan changes.

Comments.

(o) The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in the lands and waters within the Santa Monica Mountains Zone, generally depicted on the map referred to in subsection (c), and the head of any Federal agency having authority to license or permit any undertaking in such lands and waters shall, prior to the approval of the expenditure of any Federal funds on such undertaking or prior to the issuance of any license or permit, as the case may be, afford the Secretary a reasonable opportunity to comment with regard to such undertaking and shall give due consideration to any comments made by the Secretary and to the effect of such undertaking on the "findings" and purposes of this section.

(p) The Secretary shall give full consideration to the recommendations of the California Department of Parks and Recreation, the Santa Monica Mountains Comprehensive Planning Commission, and the California Coastal Commission.

Santa Monica Mountains National Recreation Area Advisory Commission. Establishment. Membership.

(q)(1) There is hereby established the Santa Monica Mountains National Recreation Area Advisory Commission (hereinafter referred to as the "Advisory Commission"). The Advisory Commission shall terminate ten years after the date of establishment of the recreation area.

(2) The Advisory Commission shall be composed of the following members to serve for terms of five years as follows:

(A) one member appointed by the Governor of the State of California;

(B) one member appointed by the mayor of the city of Los Angeles;

(C) one member appointed by the Board of Supervisors of Los Angeles County;

(D) one member appointed by the Board of Supervisors of Ventura County; and

(E) five members appointed by the Secretary, one of whom shall serve as the Commission Chairperson.

Meetings. Notice, publication in newspapers.

(3) The Advisory Commission shall meet on a regular basis. Notice of meetings and agenda shall be published in local newspapers which have a distribution which generally covers the area. Commission meetings shall be held at locations and in such a manner as to insure adequate public involvement. Such locations shall be in the region of the Santa Monica Mountains and no more than twenty-five miles from it.

(4) Members of the Commission shall serve without compensation as such, but the Secretary may pay expenses reasonably incurred in carrying out their responsibilities under this Act on vouchers signed by the Chairperson.

Compensation and expenses.

(5) The Secretary, or his or her designee, shall from time to time but at least semiannually, meet and consult with the Advisory Commission on matters relating to the development of this recreation area and with respect to carrying out the provisions of this section.

Consultation.

(r) There are authorized to be appropriated such sums as may be necessary for acquisition of lands and interests in land within the boundaries of the recreation area established under this section, but not more than $15,000,000 for fiscal year 1979, $40,000,000 for fiscal year 1980, $45,000,000 for fiscal year 1981, $10,000,000 for fiscal year 1982, and $15,000,000 for fiscal year 1983, such sums to remain available until expended. For grants to the State pursuant to subsection (n) there are authorized to be appropriated not more than $10,000,000 for fiscal year 1979, $10,000,000 for fiscal year 1980, $5,000,000 for fiscal year 1981, and $5,000,000 for fiscal year 1982, such sums to remain available until expended. For the authorizations made in this subsection, any amounts authorized but not appropriated in any fiscal year shall remain available for appropriation in succeeding fiscal years.

Appropriation authorization.

(s) For the development of essential public facilities in the recreation area there are authorized to be appropriated not more than $500,000. The Congress expects that, at least until assessment of the report required by subsection (t), any further development of the area shall be accomplished by the State of California or local units of government, subject to the approval of the Director, National Park Service.

(t) Within two years from the date of establishment of the recreation area pursuant to this section, the Secretary shall, after consulting with the Advisory Commission, develop and transmit to the Committees referred to in subsection (c) a general management plan for the recreation area consistent with the objectives of this section. Such plan shall indicate—

Management plan, transmittal to Congress.

(1) a plan for visitor use including the facilities needed to accommodate the health, safety, education and recreation needs of the public;

(2) the location and estimated costs of all facilities;

(3) the projected need for any additional facilities within the area;

(4) any additions or alterations to the boundaries of the recreation area which are necessary or desirable to the better carrying out of the purposes of this section; and

(5) a plan for preservation of scenic, archeological and natural values and of fragile ecological areas.

APPENDIX D

EXECUTIVE ORDERS 11988 and 11990 (FLOODPLAIN MANAGEMENT AND PROTECTION OF WETLANDS).

DSC-... Carlstrom

United States Department of the Interior

NATIONAL PARK SERVICE
DENVER SERVICE CENTER
755 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

N REPLY REFER TO:
W28-DSC-LC
X L76

JUN 6 1980

Memorandum

To: Assistant Managers, Branch and Division Chiefs, and Safety Engineer, Denver Service Center

From: Manager, Denver Service Center

Subject: Final National Park Service Procedures for Implementing Executive Orders 11990, Protection of Wetlands, and 11988, Floodplain Management

The enclosed procedures are for immediate implementation. The procedures contain requirements which directly affect planning, environmental analysis, design, construction, project supervision, historic preservation, concessions, and safety. Please read and distribute these procedures to the appropriate personnel under your direction for implementation.

The Water Resources Council Guidelines, the Flood Insurance Program criteria and standards (44 CFR 59-60), the Unified National Program for Floodplain Management, and 520 DM are available through the Denver Service Center Compliance Library in the Legislative Compliance Division. Please direct all questions concerning the applicability of these procedures to your work to Jon Haman (5050).

Denis P. Galvin

Enclosure

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[OR 11158]

Oregon; Proposed Withdrawal and Reservation of Lands; Correction and Amendment

The Notice of Proposed Withdrawal and Reservation of Lands appearing as FR Doc. 75-11612 on pages 19501-19502 of the issue for Monday, May 5, 1975, and the Notice of Opportunity for Public Hearing and Republication of Notice of Proposed Withdrawal appearing as FR Doc. 79-22163 on pages 41968-41969 of the issue for Wednesday, July 18, 1979, are corrected and amended as follows:

1. Correction: Under "North Fork John Day Streamside-Elkhorn Drive Roadside Zones (Combined Areas)," the legal description is corrected to read: "A strip of land of variable width located between 500 feet north of the centerline of Elkhorn Drive and 330 feet south of the centerline of the North Fork John Day River through the following subdivisions."

2. Amendment: By letter dated April 17, 1980, the applicant agency requested that the lands included in MS 984-A, located in Sections 22, 23, and 27, T. 8 S., R. 35½ E., Umatilla and Whitman National Forests, be eliminated from its application. The legal description in these sections, as amended, is revised to read as follows:

Willamette Meridian, Umatilla National Forest

T. 8 S., R. 35½ E.,
Sec. 22, lots 1, 3, and 4, MS 808, MS 359, excepting MS 984-A;

Whitman National Forest

T. 8 S., R. 35½ E.,
Sec. 23, lots 2, 3, 4, 5, and 6, MS 359, W½NE¼SW¼, excepting MS 984-A and patented MS 70;
Sec. 27, lot 1, SE¼ of lot 4, W½NE¼, SE¼NE¼NW¼, SE¼NW¼, and SW¼, excepting MS 984-A.

Therefore, pursuant to the regulations contained in 43 CFR 2091.2-5(b)(1), the lands eliminated from the application will be relieved of the segregative effect of the above-mentioned application at 10 a.m. on June 23, 1980.

Dated: May 16, 1980.

Leland D. Morrison,

Acting Chief, Branch of Lands and Minerals Operations.

[FR Doc. 80-16112 Filed 5-27-80; 8:45 am]

BILLING CODE 4310-84-M

[INT DEIS 80-36]

Rangeland Management Program for Mountain Valley Planning Area, Utah; Availability of Draft Environmental Impact Statement and Public Hearing

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 and a 1975 Federal Court Order, the Bureau of Land Management (BLM) has prepared a draft grazing environmental impact statement (EIS) for the Mountain Valley rangeland management program in Sevier, Piute, and Sanpete Counties and small portions of Wayne, Garfield, Millard, and Juab Counties.

The EIS six alternative proposals: (1) optimize non-livestock resources, (2) optimize livestock grazing, (3) rangeland management recommendation, (4) eliminate livestock grazing, (5) continuation of present management, and (6) adjust spring livestock use. The alternatives provide a range of options for the management of 499,972 acres of public land.

Alternatives 3 and 6 are the BLM preferred alternatives. Under these alternatives the proposed initial levels of livestock grazing would be 29,411 and 24,691 animal unit months (AUM's), respectively, and in the long-term increased forage production would make it possible to increase livestock grazing to 36,363 and 45,258 AUM's. Forage allocations for big game would be 16,449 and 17,127 AUM's initially, and 23,104 and 21,726 AUM's in the long-term. Under these alternatives increased forage production would also lead to improved soil erosion conditions on 373,805 and 493,758 public acres, and a general improvement in the quality of big game habitat. Recreation use would increase about 32 percent and 23 percent respectively.

The Director, Bureau of Land Management, invites written comments on the draft statement. Comments should be submitted to District Manager, Bureau of Land Management, 150 East 900 North, Richfield, Utah 84701. Comments will be accepted until July 21, 1980.

Copies of the draft environmental impact statement are available from the Richfield District BLM Office at the above address. Public reading copies of the draft statement will be available for review at the following locations:

Office of Public Affairs, Bureau of Land Management, Interior Building, 18th and C Street NW, Washington, D.C.
Utah State Office, Bureau of Land Management, University Club Building, 136 East South Temple, Salt Lake City, Utah.
Richfield District Office, Bureau of Land Management, 150 East 900 North, Richfield, Utah.
Sevier River Resource Area Office, Bureau of Land Management, 180 North 100 East, Richfield, Utah.

Notice is hereby given that oral and/or written comments will be received at public hearings held at the following locations:

July 8: 7:00 p.m., Piute County Courthouse, Junction, Utah.
July 9: 7:00 p.m., Sanpete County Courthouse, Manti, Utah.
July 10: 7:00 p.m., Sevier County Courthouse, Richfield, Utah.

Requests to testify at the public hearings should be made to Alan Partridge, EIS Team Leader, Bureau of Land Management, 150 East 900 North, Richfield, Utah 84701 (801) 896-8221.

Written and oral comments concerning adequacy of the draft statement will receive consideration in preparation of the final Grazing Environmental Impact Statement for the Mountain Valley Planning Area.

Dated: May 20, 1980

Ed Hastey,

Associate Director.

[FR Doc. 80-16110 Filed 5-27-80; 8:45 am]

BILLING CODE 4310-84-M

National Park Service

Floodplain Management and Wetland Protection Guidelines

AGENCY: National Park Service (NPS), Department of the Interior.

ACTION: Notice of final procedures.

SUMMARY: These are the final procedures of the National Park Service for implementing Executive Orders 11988, "Floodplain Management," and 11990, "Protection of Wetlands."

EFFECTIVE DATE: These procedures are effective on May 28, 1980.

SUPPLEMENTARY INFORMATION: These procedures were published as proposed guidelines in the Federal Register on March 14, 1980, for review and comment. Comments were received from the Water Resources Council, one state agency, and one private organization. An internal NPS review provided additional suggestions for improving and streamlining the procedures. All comments have been carefully considered in the preparation of these final procedures. One purpose of the Executive Orders is furtherance of the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 *et. seq.*). The Department of the Interior revised its NEPA procedures

effective March 18, 1980, and NPS NEPA guidelines are being revised to be in conformity with them. These revisions of NEPA procedures made it necessary to revise NPS draft procedures for compliance with the Executive Orders. However, the substance of the floodplain management and wetland protection procedures presented here is essentially the same as in the previously proposed guidelines.

FOR FURTHER INFORMATION CONTACT: Dr. Raymond Herrmann, Air and Water Resources Division, National Park Service, Department of the Interior, Washington, D.C. 20240, Telephone: (202) 523-5152.

Floodplain Management and Wetland Protection

Sections

1. Purpose.
2. Objectives.
3. Management Objectives.
4. Relationships to Other Requirements.
5. Scope.
6. Procedures.
7. Special Considerations.
8. Retention, Removal, or Modification of Existing Structures and Facilities.
9. Responsibilities.

Section 1. Purpose

The purpose of this notice is to set forth procedures for use by the National Park Service (NPS) in implementing Executive Order (E.O.) 11988, "Floodplain Management", and E.O. 11990, "Protection of Wetlands", hereinafter referred to as the Orders.

Section 2. Objectives

The objectives of the Orders and these procedures are to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and wetlands and to avoid direct or indirect support of development in floodplains and wetlands wherever there is a practicable alternative. Where floodplains or wetlands cannot be avoided, these procedures will focus on mitigation of the adverse effects of any action. In the context of the Orders, mitigation means to:

A. Design or modify actions so as to minimize harm to life, property, and natural values;

B. Minimize destruction, loss, or degradation of wetlands;

C. Restore and preserve natural and beneficial floodplain values; and

D. Preserve and enhance natural and beneficial wetland values.

Section 3. Management Objective

The NPS has a legislative mandate to care for the national parklands, to help the public enjoy them, and to do both in ways that ensure the integrity of the parks for continued use beyond our time. In executing this mandate, and particularly in planning and managing floodplains and wetlands within the National Park System, the NPS will:

A. Exhibit leadership in floodplain management and in the protection of wetlands;

B. Avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and the destruction or modification of wetlands;

C. Avoid the direct or indirect support of development and new construction in floodplains and wetlands whenever there is a practicable alternative;

D. Minimize the potential harm to people and property and to natural values when an action must be located in the base floodplain;

E. Identify areas subject to flooding within units of the National Park System;

F. Identify, restore, and preserve the natural and beneficial values of floodplains;

G. Identify, restore, and enhance the natural and beneficial values of wetlands;

H. Require structures and facilities in the floodplain to be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program (44 CFR 60);

I. Involve the public throughout the decisionmaking process for all actions requiring compliance with the Orders;

J. Promote the use of nonstructural flood protection methods to reduce the risk of flood loss;

K. Use the conceptual framework of the Water Resources Council's Unified National Program as a basis for planning when the base floodplain cannot be avoided;

L. Improve and coordinate research, plans, programs, and actions involving floodplains and wetlands within the National Park System in such a manner that the Nation may attain the widest range of benefits from them.

Section 4. Relationships to Other Requirements

These final procedures for complying with the Orders will be made a part of NPS-13 concerning compliance with legislative and executive requirements which relate to NPS planning activities. They do not stand alone. Rather, they supplement and must be used in conjunction with:

A. Department of the Interior procedures and policies for complying with the Orders. These apply to all NPS actions, are contained in Chapter 1 of Part 520 of the Department of the Interior Manual, and became effective June 11, 1979.

B. The U.S. Water Resources Council (WRC) Floodplain Management Guidelines for Implementing E.O. 11988 (43 FR 6030), hereinafter referred to as the WRC Guidelines. They provide basic guidance for interpreting that Order and conducting the floodplain management planning and decisionmaking process.

The NPS:

1. Adopts the substantive requirements of E.O. 11988 as interpreted and explained in the WRC Guidelines;

2. Follows the WRC Guidelines except where they are superseded by the Department of the Interior Manual;

3. Adheres to the methods, standards, and definitions of terms as set forth in the WRC Guidelines for determining risks and hazards of flood loss; minimization of impacts on property, natural values, health, safety and welfare; and evaluation of alternatives.

C. The Unified National Program for Floodplain Management, issued by the WRC in September 1979. This program seeks wise management for the Nation's floodplains to reduce flood loss and sets forth a conceptual framework for floodplain management. The NPS procedures for complying with the Orders and its policy of managing floodplains for protection and enhancement of their natural ecological productivity are consistent with the goals of the program.

D. The Council on Environmental Quality (CEQ) Implementing Regulations for NEPA (40 CFR 1500); the policies and procedures of the Department of the Interior for compliance with NEPA (516 DM 1-6); and the NEPA Compliance Guidelines (NPS-12). NPS actions requiring compliance with the Orders will require either an Environmental Assessment (EA) Or an Environmental Impact Statement (EIS). The requirements of these NPS procedures for compliance with the Orders will be combined with or appended to the environmental documents for each action.

E. The Standards and Criteria of the National Flood Insurance Program (NFIP) (44 CFR 60). Adherence to these Standards and Criteria assures that the Federal government requires no less of itself than it requires of non-Federal entities for the protection of property from flood hazards. The Standards and Criteria of the NFIP are directed towards the protection of structures and facilities from flood hazards and the protection of existing development from the effects of new development. Unless these standards are demonstrably

inappropriate for a given type of structure or facility, they will apply to all NPS planning, assessment, and design activities for actions in the base floodplain.

F. The Fish and Wildlife Coordination Act (FWCA) (50 CFR 410). This Act requires the NPS to give wildlife conservation equal consideration with other factors when proposing to undertake the impoundment, diversion, deepening, or other control or modification of waters of any stream or other body of water. These actions obviously will lie within the base floodplain and may affect wetlands. When the NPS finds no practicable alternative to such actions, compliance with the FWCA will coincide with compliance with the Orders, and compliance with both sets of regulations will be integrated with or appended to the EA or EIS for the action.

G. Other compliance procedures for water-oriented actions of the NPS which may be required and can be integrated with the EA or EIS for compliance with the Orders include: The Coastal Zone Management Act of 1972, which has certain requirements for consistency of NPS planning actions with approved state coastal zone management programs; Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act of 1977, which require Department of the Army permits for construction and disposal of dredged material in waters of the United States, including adjacent wetlands (3 CFR 320–340); and Section 73 of the Water Resources Development Act of 1974 on non-structural alternatives. Procedures for compliance with these requirements are given in NPS Guidelines for Legislative Compliance (NPS–13) and will not be restated here.

Section 5. Scope

A. *Applicability*—1. These procedures apply to all NPS actions which have the potential for adversely impacting floodplains or wetlands or their occupants, or which are subject to potential harm by location in floodplains or wetlands. The basic test of the potential of an action to affect floodplains or wetlands is the probability for adverse effects associated with:

a. The occupancy or modification of floodplains, and the direct and indirect support of floodplain development; or

b. The destruction or modification of wetlands, and the direct and indirect support of wetland development.

2. These procedures apply to all actions proposed after May 28, 1980, and to all actions that were ongoing, in the planning or development stage, or undergoing implementation after the effective date of the Orders (May 24, 1977), but which were incomplete on May 28, 1980. Depending upon their stage of completion, actions in the latter category will enter the compliance procedures at the most appropriate decision-making point for carrying out the objectives of the Orders.

B. *Excepted Actions*—The NPS has identified certain classes of action which require modified approaches to achieve the objectives of the Orders and reduce delay and paperwork.

1. If the action is normally categorically excluded from NEPA compliance requirements, it must be determined whether the action has potential for adverse effects on floodplains or wetlands. If it is determined to have no such potential, it is excepted from compliance with these procedures. Where actions normally categorically excluded from NEPA are determined to hold the potential for adverse effects on floodplains or wetlands, an EA and a Statement of Findings will be prepared on the action. NEPA categorical exclusions include the normal day-to-day administrative and operational activities of the NPS including nondestructive surveys and studies. A listing of NEPA categorical exclusions is contained in the Departmental Manual (516 DM 2, Appendix 1 and 516 DM 6, Appendix 7).

2. Additional actions which may be excepted from compliance with the Orders are:

a. Scenic overlooks and foot trails.

b. Picnic and camping facilities including appropriate sanitary facilities needed to provide full utilization of recreational developments, provided that floodproofing is a consideration in their design and construction.

c. Entrance, access, and internal roads to or within existing units of the system (not excepted for wetlands).

d. Outdoor play courts in recreation areas (not excepted for wetlands).

e. Landscaping in outdoor recreation areas (not excepted for wetlands).

f. Small parking lots for use of the area (not excepted for wetlands).

3. Certain types of action cannot accomplish their intended purpose unless they are located or carried out in close proximity to water. For these actions which are functionally dependent upon water, non-floodplain sites are never a practicable alternative. However, practicable alternative actions and the no action option are to be evaluated for all water dependent actions.

These procedures do not require a public notice explaining why it is necessary for marinas, docks, piers, water intake facilities, bridges, flood control facilities, water monitoring stations, drainage ditches, debris removal, outdoor water sports facilities, boardwalks to protect wetlands, and similar water dependent actions to be located in the floodplain. These procedures constitute a finding that there is no practicable alternative site outside the floodplain when the NPS proposes to perform any water dependent action.

4. When the NPS performs emergency actions essential to protect property and public health and safety, a modified application of the E.O. is required. Taking into consideration the need for rapid action in emergency situations, all possible steps to mitigate potential adverse impacts of such actions will be taken.

5. E.O. 11990 contains a limited exception not found in E.O. 11988 that applies only to actions affecting wetlands not in a floodplain, and that have no potential to result in harm to or within a floodplain or support floodplain development. Such an action is exempt from these procedures if:

a. It is an NPS, NPS-assisted, or NPS-permitted project under construction before May 24, 1977; or

b. It is a project for which the NPS has a draft or final EIS which adequately analyzes the action and which was filed before October 1, 1977. Actions are not exempt if the EIS:

(i) Only generally covers the proposed action;

(ii) Is devoted largely to related activities; or

(iii) Treats the project area or action without an adequate and specific analysis of the floodplain and wetland implications of the proposed action.

6. For many small projects, the cost of obtaining precise base floodplain boundaries is prohibitive in relation to the action. For these actions, the NPS will either (1) choose to use a worst case analysis by assuming the project is in or will affect the base floodplain, or (2) perform the full analysis as described under 6.C.1.a.

Section 6. Procedures

A. *General*—The procedures to be followed in applying the Orders to agency activities are set forth in Part II of the WRC Guidelines. The Department of the Interior has adopted the WRC Guidelines for use by its bureaus and offices. These NPS procedures supplement and amplify the WRC Guidelines and deviate from them only where superseded by Departmental Manual (520 DM 1) instructions. The following procedures use the same definitions of terms as those found in

the WRC Guidelines and in the National Flood Insurance Program (44 CFR 59).

B. *Inventory*—Floodplain, flood hazard and wetland areas subject to or potentially subject to public use and/or development, where the magnitude of hazard and impact of human activities is likely to be greatest, will be inventoried prior to or during the preparation of the General Management Plan or other planning documents. Identification of the base floodplain will be based upon data available from the agencies listed in Part II, 1.B.2 of the WRC Guidelines. Where the required level of information is not available from those agencies, the NPS will obtain an adequate data base for planning and management by using qualified hydrologists, engineers and scientists.

C. *Decision-Making Process*—For the most part, the development of an adequate floodplain and wetland data base will allow compliance with the Orders to be made at the General Management or Development Concept stage of planning. However, when actions are proposed (including externally initiated actions) that are not part of a larger plan, they will have to be addressed on a case-by-case basis for compliance.

1. *Determine if a Proposed Action is in, or Could Affect, a Floodplain or Wetland.*

a. *Determine if the Action is the Base Floodplain.*

Flood Insurance Rate Maps or Flood Hazard Boundary Maps are usually not available for units of the National Park System. For most NPS actions, the search for flood hazard information will begin with the agencies listed by the WRC Guidelines in Part II, Section 1.B.1. When suitably scaled maps are not available from those agencies, and the agencies do not have or know of detailed information and cannot assist the NPS in determining if the proposed action is in the base floodplain, the NPS will either:

(i) Assume that the project is in the base floodplain and begin compliance with the Orders; or

(ii) Obtain the services of a federal or licensed consulting hydrologist or engineer experienced with this type of work. The quality of information required from this professional shall be comparable to that required of flood insurance study contractors to the Federal Insurance Administration. At a minimum the professional will:

(a) Locate the site with respect to the limits of coastal high hazard area, floodway, and 100-year floodplain (500-year, if a critical action is involved);

(b) Determine the 100-year flood elevations or the 500 year elevations for critical actions. In the absence of evidence to the contrary, the NPS will assume that any action involving a structure or facility that has been flooded lies in the 100-year floodplain; and

(c) Provide other information depending upon the site and type of action, such as:

Velocity of floodwater;
Rate of floodwater rise;
Duration of flooding;
Debris loads;
Flash flood potential;
Warning and evacuation time;
Evacuation routes;
Mudslides;
Subsidence and collapse;
Erosion;
Sinkholes and caves;
Ice jams;
Pollutants;
Wave heights;
Tsunamis;
Floodproofing methods; and
Special problems such as ice and snow pack melt from volcanic activity.

b. *Determine if the Action is in a Wetland.*

(i) Initially, the NPS will consult with the responsible field office of the U.S. Fish and Wildlife Service to determine if a National Wetland Inventory Map is available for the vicinity of the proposed action.

(ii) If the U.S. Fish and Wildlife Service does not have adequate information upon which to base the wetland determination, the NPS will consult wetland inventories maintained by the Army Corps of Engineers, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, the state, and the NPS unit involved.

(iii) If the information is still inadequate, the NPS will carry out on on-site analysis performed by Service professionals qualified to determine a wetland based on the definition in the Wetlands Order.

c. *Determine if a Proposed Action Could Affect a Floodplain or Wetland.*

If the information gathered under 6.B. or (6.C.1.a.) and (6.C.1.b.) shows that the proposed action is not in a floodplain of wetland, the NPS Regional Director must then determine if the project holds the potential for indirect impacts on nearby floodplains and wetlands. An action has indirect impacts on nearby floodplains and wetlands if it:

(i) Supports, encourages, allows, serves, or otherwise facilitates additional floodplain or wetland development; or

(ii) Reinforces existing land uses which have developed without reflecting the concepts of hazard and risk minimization and restoration of natural floodplain and wetland values; or

(iii) Has secondary or dispersed effects which reach into the floodplain or wetland and can cause change to the ecologicial systems functioning there or can increase flood loss potential to existing developements.

2. *Public Review.*

a. All NPS actions subject to compliance with the Orders will be treated in an environmental document (EA or EIS). Conformity with the public involvement requirements of the CEQ regulations (40 CFR 1506.6) will ensure opportunities for public participation in decisions concerning floodplain and wetland use.

b. If there is a reasonable likelihood that a proposed action or its alternatives will impact a floodplain or wetland, and no EIS is anticipated, an appropriate scoping process will be under taken for the EA.

c. Public notice information will be targeted to reach individuals and groups affected by, or with a direct interest in, the proposed action, and public involvement will provide an opportunity to assist in the development of alternatives, to review and indicate a preference among alternatives and to appeal decisions prior to aproval of plans.

d. Environmental Assessments which reveal adverse impacts to floodplains or wetlands from the action proposed, will be made available for public review for not less than 60 days prior to issuing a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS.

e. NEPA and decision documents on proposals in floodplains or wetlands will be circulated to at least the following:

Environmental Protection Agency;
Federal Emergency Management Agency;
U.S. Fish and Wildlife Service;
U.S. Geological Survey;
Water and Power Resources Service;
U.S. Army Corps of Engineers;
U.S. Soil Conservation Service;
State and Area A-95 Clearinghouses; and
Coastal or River Basin Commissions and State Coastal Zone Management Administrators as appropriate.

f. Following public and agency review of an EA, the Regional Director will evaluate the proposed action and its alternatives and issue either a decision document and FONSI or a NOI to prepare an EIS. If the proposed action involves locating in a floodplain or wetland, the FONSI will be coupled with

a separately identifiable Statement of Findings which documents the rationale that there is no practicable alternative to locating in or impacting these areas and which certifies that no critical actions are involved. Public notice of a FONSI/Statement of Findings will be published in accordance with 40 CFR 1506.6 and sent to all agencies listed in "e." above.

g. When an EIS is prepared on a proposed action and its alternatives, public participation is focused on the draft EIS (DEIS). The DEIS will contain a full exposition of floodplain and wetland areas used or affected by the proposal and its alternatives, any hazards associated with public use of these areas, the natural values of the floodplains and wetlands.

The DEIS will be made available for public and agency review for a minimum of 60 days from the date it is filed with the EPA. A Federal Register notice of this availability and the EIS cover sheet shall indicate that the DEIS is also to serve as a compliance instrument for the Orders. Any detailed compliance documentation will be included as an appendix to the DEIS. The distribution of the DEIS will include the agencies given in "e." above.

3. *Identify and Evaluate Practicable Alternatives to Locating in the Base Floodplain or Wetland.*

a. The EA or DEIS provides documentation of the consequences of practicable alternatives identified during the early stages of planning and will contain:

(i) A discussion of the "no action" alternative; and

(ii) A discussion of any alternatives for carrying out desired actions outside the floodplain or wetland and for avoiding any adverse indirect effects on these areas. The consequences of alternatives involving sites or actions outside the base floodplain will be fully assessed to minimize, mitigate, and, if possible, eliminate any adverse uses or effects upon a floodplain or wetland. If an alternative is judged to have no direct or indirect impact on a floodplain or wetland, this determination will be recorded in the environmental analysis for the alternative.

b. In determining the practicability of an alternative, the NPS will anlayze the following factors:

(i) Natural environment (topography, ecosystem integrity, habitat, hazards, etc.)

(ii) Social concerns (aesthetics, historic and cultural values, land use patterns, etc.)

(iii) Economic aspects (cost of space, construction, services, and relocation).

(iv) Legal contraints.

c. the FONSI or final EIS (FEIS), when the proposed action involves adverse impacts to base floodplain or wetland areas, will be coupled with a separately identfiable Statement of Findings not to exceed three pages documenting the rationale for the determination that there is no practicable alternative locating in or impacting these areas. The Statement of Findings will contain:

(i) A map showing the location of the floodplain or wetland and the site(s) of the proposed action;

(ii) A description of why the proposed action must be located in a floodplain or wetland;

(iii) A statement indicating conformity with local and/or state floodplain protection standards;

(iv) A list of alternatives considered;

(v) A description of how the activity will be designed or modified to minimize harm to or within the floodplain or wetland;

(vi) A statement indicating how the proposed action would affect natural and beneficial floodplain values; and

(vii) The signature of the Regional Director recommending approval of the Statement of Findings and the approval signature of the Director on the combined document.

4. *Identify Impacts.*

The environmental documents prepared for proposed actions and their alternatives located in floodplains or wetlands will identify the full range of potential direct or indirect adverse impacts associated with the occupancy and modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action. Flood hazard-related factors will be analyzed for all actions. These include: public health, safety and welfare; depth, velocity and rate of rise of flood water; duration of flooding; high hazard areas (riverine and coastal); available warning and evacuation time and routes; and effects of special situations, e.g., levees and other protection works, erosion, subsidence, collapse, sink holes, ice jams, flood-source debris load, pollutants, etc. Natural values-related factors will be analyzed for all actions. These include: water resource values (natural moderation of floods, water quality maintenance, and ground water recharge); living resource values (flora and fauna and biological productivity); scientific and recreational values; and agricultural, aquacultural and forestry values, etc.

Factors relevant to a proposed action's effects on the survival and quality of wetlands will be analyzed for all actions. These include: public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; sediment and erosion; maintenance of natural systems, including conservation and long term productivity of existing flora and fauna; species and habitat diversity and stability; hydrologic utility; fish and wildlife; and other uses of wetlands in the public interest including recreational, scientific, and cultural uses, etc.

In a case where the proposed action is associated with an existing facility or management program, the EA or DEIS will address effects the proposed action would have in concert with the existing development. For example, the proposed action could encourage continued use and future development resulting in continued risk of life and property and foreclosure of opportunity to restore floodplain and/or wetland values. Alteration of the physical characteristics of floodplains and wetlands often has subtle and far-reaching effects on the biological systems dependent upon them. In addition to the natural values of these areas, the risk to human safety, health, and financial investment must be assessed before a decision is made on a preferred course of action.

5. *Minimize, Restore, Preserve, and Enhance.*

Where avoidance of floodplains or wetlands cannot be achieved, the NPS will design or modify its actions so as to minimize harm to or within the floodplain, minimize the destruction, loss or degradation of wetlands, restore and preserve natural and beneficial floodplain values, and preserve and enhance natural and beneficial wetland values.

a. *Minimize*—The NPS will minimize potential harm to the investment at risk from the 100-year flood (500-year flood for critical actions) and minimize potential adverse impacts the action may have on life and property and on floodplain and wetland values. Minimization of harm to property will be undertaken in accord with the standards and criteria set out in 44 CFR 60 *et seq.* (formerly 24 CFR § 1909 *et seq.*). New structures will be elevated on open works—walls, columns, piers, piles, etc.—rather than on fill in all cases within coastal high hazard areas and in the 100-year floodplain in all cases where practicable. Minimizing harm to lives will include, but not be limited to, marking historic and 100-year flood levels, providing flood information, and providing warning and evacuation procedures that emphasize adequate warning times, and access and egress routes.

b. *Restore*—Where floodplain and etland values have been harmed by in's previous actions, NPS Natural source Management Plans will clude actions to reestablish an vironment in which the ecological stems of the floodplain and wetland n function in a natural manner. When action is proposed in a floodplain or etland which has been degraded by st actions, restoration actions will be cluded as a part of the proposal. here practicable, wetlands and odplains will be further restored by e removal of non-conforming uctures and facilities.

c. *Preserve*—The law establishing the S requires it to preserve natural sources within the National Park stem. Consequently, NPS natural sources policy and management phasis is on perpetuation of natural osystems including floodplain and etland ecosystems. Where actions are avoidably located in floodplain or etland areas, the NPS will undertake ery possible effort to maintain the egrity of the natural ecosystem ereby preserving it and its attendant ganisms and physical processes.

d. *Enhance*—Where the opportunity sts, the NPS will not simply preserve, t will enhance the values of wetlands d floodplains by using them for their ucational, recreational, scientific, and ilar purposes that are not disruptive natural ecological conditions.

. *Findings and Public Explanation.* Where evaluation of an EA results in nding by the Regional Director that re is no practicable alternative to nificantly impacting a base floodplain wetland, a NOI will be filed and an prepared. In such cases, the tement of Findings will be combined a separately identifiable document h the FEIS. If it is determined that acts are not significant, the tement of Findings may be combined a separately identifiable document a FONSI. Upon approval by the ector, the Statement of Findings will ent to the appropriate agencies ed in Section 6.C.2.e.) and A-95 ring houses.

Implementation.

or actions to be performed within or cting floodplains, or wetlands, NPS ensure that the steps identified in ion C.5. above are adequately ied over all stages in ementation of this action.

ion 7. Special Considerations

A *Cultural Resources*—As part of its date, the National Park Service erves and interprets cultural urces and objects possessing torical, archeological, architectural, and cultural significance. many of these cultural resources are included in, or eligible for inclusion in, the National Register of Historic Places. National Park Service Management Policies, Cultural Resource Guidelines (NPS 28), and specific park management plans give direction for the management of these resources. In addition, NPS action affecting cultural resources included in, or eligible for inclusion in, the National Register are subject to the provisions of Section 106 of the National Historic Preservation Act of 1966, Sections 1(3) and 2(b) of E.O. 11593, *Protection and Enhancement of the Cultural Environment*, and the implementing regulations found in 36 CFR, Part 800, *Protection of Historic Cultural Properties*. In general, cultural resources located in floodplains will be managed to assure their on-site preservation. Floodproofing measures taken to protect the cultural property from the hydraulic and erosive forces of flooding will be designed so as not to adversely affect the historic integrity of the structure or scene. When a cultural site or structure does not have the significance to merit action sufficient to ensure its preservation from flood loss, an appropriate level of study and recordation will be done.

Unless historic objects, furnishings, collections, or documents are required to retain the historic integrity of a site, they will not be kept within a 500-year floodplain. When there is no practicable alternative to keeping such material in the 500-year floodplain, a Statement of Findings will be prepared and the material made either totally safe from flood loss or be under an action plan or contract for rapid removal from the critical floodplain within the limits of available time for warning and evaluation.

B. *Critical Actions.*

1. These are actions for which even a slight chance of flooding is too great. The floodplain of concern for critical actions is the 500-year floodplain. Sites completely outside of the 500-year floodplain will be used for all critical action proposals.

The General Management Plan will identify all critical actions existing within the 500-year floodplain of the park, describe corrective measures to be taken, and present a time schedule for the corrective measures. Possible alternatives are 1) relocate the critical action facility or structure outside the 500-year floodplain, 2) change the use of the facility or structure to a non-critical action, or 3) use floodproofing to protect the critical action from the 500-year flood.

2. Critical actions include, but are not limited to the erection or rehabilitation of structures of facilities:

a. Which contain hazardous material such as highly volatile, flammable, explosive, toxic, infectious, or water reaction materials. These could create an added dimension to the flood disaster. Major fuel storage facilities and 40,000 gpd. or larger sewage treatment facilities will not be placed within the 100-year floodplain, and will occupy the 500-year floodplain only when there is no practicable alternative and they can be completely floodproofed against the erosive and hydraulic force of the 500-year flood.

b. From which rapid evacuation would be difficult. These are structures occupied by persons who may not be sufficiently mobile to avoid the loss of life or injury during flood and storm events. Clinics and emergency aid stations will not be located in the 500-year floodplain.

c. Which contain irreplaceable documents or objects. This includes museums, record collections, artifacts, historic furnishing, etc.

C. *High Hazard Areas*—1. Structures for human occupancy will not be placed in coastal high hazard areas, the floodway, or in areas subject to flash flooding. Further, no structures in which humans might seek shelter during storm or flood events will be placed in these areas. Parking, camping, picnicking, or other similar activities causing congregations of people and property will not be permitted in flash flood areas because of the short warning available for such events. The hazardous floodway for a flash flood shall be the area covered by the maximum probable flood or the extreme flow in the basin where the potential depth and velocity of flood could cause loss of life or property.

2. A unit Superintendent has the authority (36 CFR 2.6) to close any area to entry or limit public use of an area when necessary for the protection, safety, and welfare of persons or property. When studies reveal, or it otherwise becomes apparent, that existing structures are subject to flash flood hazard, and thus unsafe for human occupancy or shelter, action shall be taken to vacate the structures. Actions to remove the structures themselves will require environmental assessment and the following of these procedures to avoid relocating in a similarly hazardous area.

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Section 8. Removal, or Modification of Existing Structures and Facilities

General Management Plans for Units of the National Park System will

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inventory existing structures, facilities, and programs involving the use of floodplains, and wetlands, and will record decisions on their retention, removal or modification. The Regional Safety Manager will evaluate all such structures and facilities to ensure that early warning systems, plans, and means of personnel evacuation are in compliance with safety standards. Upon the Safety Manager's recommendation, the Regional Director may require the closure of structures to human occupancy or require that the use of the structure be changed. The Regional Director also may require the modification or floodproofing of structures and facilities to protect property and Federal interest against loss. The Natural Resources Management Plan and/or the Water Resources Management Plan will specify requirements for monitoring programs and other actions to ensure protection and enhancement of floodplain and wetlands values to the greatest extent possible. These plans will provide an important basis for demonstrating NPS compliance with the Orders. Noncritical actions for which compliance documentation has been prepared, either on an action itself or in the context of a previous enabling plan, will be listed and the nature of the compliance documentation indicated.

Section 9. Responsibilities

A. *The Director* is responsible for ensuring NPS compliance with the Orders in accordance with provisions of Chapter 1 of Part 520 of the Departmental Manual. In performing this duty, the Director will:

1. Approve NPS policies, procedures, guidelines, or directives for complying with the Orders.

2. Approve any reports to the Department, the WRC, or the CEQ concerning compliance with the Orders.

3. Be the responsible official for all Statements of Findings.

B. *The Deputy Director, Associate Directors, and Assistant Directors* are responsible for:

1. General supervision of the Divisions and Offices under their jurisdiction to ensure compliance with the Orders and these procedures; and

2. Reviewing and concurring with floodplain and wetland procedures prepared by or pertaining to their Divisions and Offices prior to forwarding to the Director for approval.

C. *The Chief, Office of Management Policy* is responsible for coordinating, drafting, and preparing revisions to NPS Management Policies to ensure compliance with the Orders.

D. *The Chief, Office of Park Planning and Environmental Compliance* is responsible for these guidelines with NPS guidelines for park planning and NEPA compliance so as to satisfy the substantive and procedural requirements of the Orders.

E. *The Chief, Budget Division* is responsible for ensuring that each request for new authorization or appropriation for a planned action to be located in a floodplain or wetland is accompanied by a statement indicating that the planned action complies with the Orders.

F. *The Chief, Air and Water Resources Division* is responsible for:

1. Developing, in consultation with the Chief, Office of Environmental Compliance, NPS guidelines for implementing the Orders;

2. Concurring with Statement of Findings forwarded to the Washington Office by Regional Directors; and

3. Returning signed Statements of Findings to Regional Directors for sending to appropriate agencies and A-95 clearing houses.

G. *Regional Directors* are responsible for ensuring compliance with the Orders and these procedures. In performing this duty they will:

1. Obtain and analyze hydrologic data necessary to satisfy NPS NEPA compliance procedures for floodplain and wetland areas;

2. Conduct planning studies involving floodplains and wetlands in accordance with these procedures;

3. Determine whether proposed actions under their jurisdictions are located in wetlands or base flood plains;

4. Ensure that floodproofing and other measures of flood protection are applied to construction of new major rehabilitation of existing structures or facilities in a floodplain where there are no practicable alternatives to a floodplain location;

5. Ensure that the base floodplain in which significant public use occurs is provided with proven warning systems and established evacuation procedures, and that existing and planned structures and facilities in floodplains comply with requirements for public and employee safety.

6. Identify and include floodplain and/or wetlands restrictions in legal conveyance for granting of leases, easements, and rights-of-ways;

7. Ensure that park concessionaires conform in all respects to the Orders;

8. Ensure preparation of appropriate compliance documents when the proposed action would be located in or would affect a floodplain or wetland;

9. Forward to the Washington Office for approval of the Director FONSI's or FEIS's coupled with Statements of Findings when proposed actions would adversely affect a floodplain or wetland;

10. Sign and issue public notices informing the public and the A-95 clearinghouses of the NPS proposed action in or affecting a floodplain or wetland;

11. Ensure that no request for new authorization or appropriation for a planned action in a floodplain (i.e., line item or lump sum construction project) is forwarded to the Washington Office unless it complies with the Orders; and

12. Close or change the use of any structure or gathering place upon the determination that its location is hazardous to human life, safety, or welfare.

H. *Park Superintendents* are responsible for ensuring that within publicly-used floodplains, flood heights are conspicuously delineated on structures and other places where appropriate, showing the 100 and 500 year levels and the flood of record where historic data are available, and for posting warnings in areas subject to flash flood hazard. The area Superintendents also are responsible for the immediate closure of areas or structures they believe to be hazardous for occupancy because of flash flood danger.

Ann F. Hutchison, (AKA Ira)
Acting Director, National Park Service.

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Office of the Secretary

Part-Time Employment Program

AGENCY: Department of the Interior.

ACTION: Proposed instructions and requirements implementing the Federal Employees Part-Time Career Employment Act of 1978.

SUMMARY: The Department of the Interior (DOI) proposes to issue instructions in the DOI Departmental Manual to govern the operation of a part-time career employment program within the DOI, as required by Pub. L. 95-437, the Federal Employees Part-Time Career Employment Act of 1978 (5 U.S.C. 3401 *et seq.*).

The Act narrows the definition of part-time career employment in the Federal Government from scheduled work of less then 40 hours per week to scheduled work of between 16 and 32 hours per week, requires most Federal agencies to develop and administer a program to expand part-time employment opportunities; and changes the personnel ceiling and fringe benefit

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.